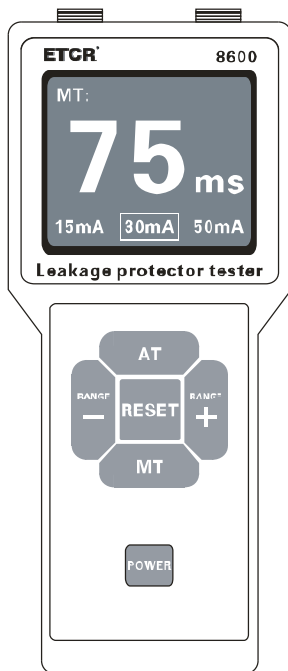


ETCR[®] Leakage protector tester

ETCR 8600



<http://www.etcrc.com>

MANUAL

ETCR Electronic Technology Co.,Ltd

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Attention

Thank you for purchasing **ETCR8600 Leakage Protector Tester** of our company. In order to make better use of the product, please be certain:

- **To read this user manual carefully.**
- **To comply with the operating cautions presented in this manual.**







- ⊍ Pay special attention to safety when using this instrument in any case.
- ⊍ Observe the text and symbols attached to the front and rear panels of the instrument.
- ⊍ **Don not use the instrument to measure a line with a voltage higher than 250V.**
- ⊍ **Before measurement, disconnect the load fuse of the measured leakage protector.**
- ⊍ **L interface must connect to the fire wire, N interface must connect to the ground wire.**
- ⊍ **The Socket test line of the instrument is custom-made, forbid to use other plug with cord instead of it.**
- ⊍ After measurement, removed the test wire from the measured wire first.
- ⊍ It is forbidden to use the instrument when neither rear cover of the instrument nor the batter cover is in place.
- ⊍ Never use the instrument when the instrument case or measuring wire is broken and therefore any metallic part is exposed.
- ⊍ Don not place the instrument at a environment with high temperature, high humidity, condensation and direct sunshine for a long time
- ⊍ It is necessary to maintain the instrument periodically to keep it clean. Don not wipe the instrument by using corrosive medium or abrasive object.
- ⊍ Please observe the correct polarity when replacing the battery. Remove the battery from the instrument if you expect not to use the instrument for a long time.
- ⊍ Please replace the battery with a new one when the batter voltage is so low that the LCD display is dim.

- ⌋ Operation, disassembly and maintenance of the instrument must be carried out only by a authorized and qualified person.
- ⌋ When there is an instrument fault, never use it because continual use may result in danger. In this case, isolate the instrument immediately and delivered to an authorized agency for dealing with it.
- ⌋ The user must follow the safety instructions preceded by “” warning symbol on the instrument and manual.
- ⌋ The user must strictly follow the instructions preceded by “” danger symbol on the instrument and manual.

I. Brief introduction

ETCR8600 Leakage Protector Tester is well designed and manufactured for online measuring the leakage operating current, leakage non-operating current, leakage operating time of the leakage protector; adopt 128dots×64dots displayed, it is convenient and intuitive. The range of leakage current is 0~500mA(10 gears: 15, 30, 50, 75, 100, 150, 200, 250, 300, 500mA),range of the leakage operating time is 0~999ms. It is a product with high accuracy, small size, light weight, exquisite appearance, easy to carry, is an ideal tool for variety of leakage protector in site or in laboratory testing.

II. Electrical Symbol

	Extremely dangerous! The operators must keep to the safety rules strictly, otherwise, electric shock will result in death or injury.
	Dangerous! The operators must keep to the safety rules strictly, otherwise, electric shock will result in will result in death or injury.
	Warning! The operators must keep to the safety rules strictly, otherwise, personal injury or equipment damage will occur.
	Double insulation.
	Alternating current (AC).
	Direct current (DC).

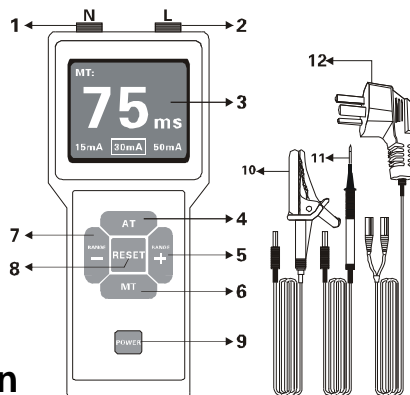
III. Technical Specification

Function	Measurement of leakage operating current, leakage non-operating current, leakage operating time of the leakage protector.
Power Supply	DC6V alkaline batteries (LR6 1.5V×4).
Test line Voltage	Do not exceed AC 250V.
rated voltage	AC 220V.

Leakage current gear	15, 30, 50, 75, 100, 150, 200, 250, 300, 500mA.
range of the leakage operating time	0~999ms.
accuracy of the leakage operating time	±0.5%.
accuracy of the current for each gear	±1.0%.
Failure information	When the LCD display fault , it may be the measured rated operating current gear is too small or the leakage protector has some faults.
length of the test line	1.8m.
Test mode	Manually or automatically.
Display Mode	LCD: 128dots×64dots.
Dimension	170mm×75mm×30mm.
Weight	290g (including the batteries); Total weight: 350g(including the packing).
LCD Dimension	Display field: 44mm×27mm.
battery voltage	A Low-Battery symbol is displayed and the user should replace the battery with a new one when the battery voltage drops to 4.8V. In this case, the measured values are still accurate.
Working Current	40mA Max.
Working Humiture	-10°C-40°C, below 80%rh.
Storage Humiture	-10°C-60°C, below 70%rh.
Insulating Strength	≥100MΩ, AC2kV/rms(between the alloy of the clamp and the housing).
Applicable	IEC1010-1, IEC1010-2-032, Pollution degree

IV. Instrument Structure

1. N interface (connect ground wire)
2. L interface (connect fire wire)
3. LCD
4. AT: auto key
5. RANGE+ key (gear up)
6. MT: manual key
7. RANGE- key(gear down)
8. RESET: reset key
9. POWER: (boot up, shutdown)
10. Crocodile clip test line
11. Probe test line
12. Socket test line



V. Instrument Operation

1. boot up, shutdown

Boot up the instrument by pressing the **POWER** key. The LCD will light up. If the LCD display is dim, the battery voltage may be low. If so, replace the battery with a new one. Press the **POWER** key again to shutdown the instrument. This instrument will be shutdown automatically after starting 5 minutes.

2. Manual / automatic switch

This instrument has the manual (**MT**) and (**AT**) automatic test mode. Press **MT** and **AT** key to switch to manual or automatic mode. After boot up, it is default to the manual(MT) test mode. In the manual mode, the top left corner of the LCD shows **MT** symbol, in the automatic mode, the top left corner of the LCD shows **MT** symbol.

In the automatic mode, start the measurement from the lowest gear 15mA rated operating current. If the leakage protector does not trip, the instrument will increase a gear automatically after 2 seconds. If the leakage protector also does not trip, the instrument

will increase a gear automatically again after 2 seconds, until the trip breaking. At this time, the displayed gear on the button of LCD screen is the actual leakage operating current value, the displayed time is the leakage operating time.


3. Switch the gear of rated operating current

The rated operating current of the instrument from 0 to 500mA were divided into ten gears: 15mA, 30mA, 50mA, 75mA, 100mA, 150mA, 200mA, 250mA, 300mA, 500mA. Press **RANGE-** or **RANGE+** to switch the gears. On the bottom of the LCD indicates the current gear. After boot up, it is default to the lowest gear (15mA) to start test.

4. Reset

After each test, press the **RESET** key to reset, the leakage operating time will be zero clearing, then can be tested again.

5. Measurement

	Electric shock, dangerous! The instrument can be operated only by the trained and authorized person. The operators must keep to the safety rules strictly, otherwise, electric shock will result in personal injury or damage to the equipment.
	Don not use the instrument to measure the lines with a voltage of higher than 250V. Otherwise, electric shock will result in personal injury or damage to the equipment.
	L interface must connect to the fire wire of the measured leakage protector, N interface must connect to the ground wire of the measured leakage protector. Otherwise, electric shock will result in damage to the equipment.
	The Socket test line of the instrument is custom-made, the red plug connect to the fire wire, the black plug connect to the ground wire. Forbid to use other plug with cord instead of it. Otherwise, electric shock will result in personal injury or damage to the equipment.

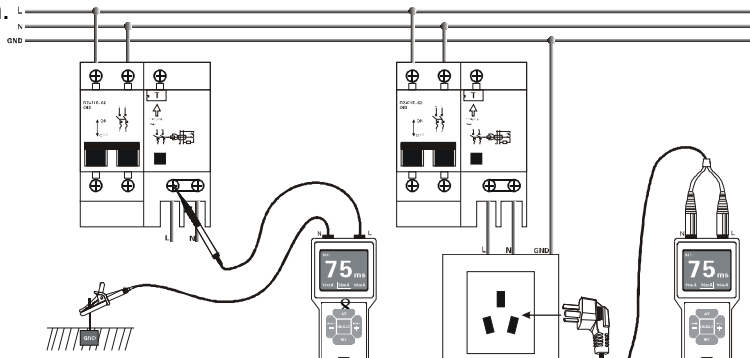
Before measurement, disconnect the load fuse of the measured leakage protector to avoid damage to the load equipment. Then check the nameplate rating of the measured leakage protector, According to the nameplate rating to determine the current gear.(Generally, for the indoor type single phase two-wire mode leakage protector, the rated operating current is 30mA, the rated non-operating current is 15mA, The break duration $\leq 0.1s$, that is $\leq 100ms$).

Boot up, select the test mode and the gear of the rated leakage operating current, it is default to the manual (MT) test mode, The connection as shown below:


Connection 1: one end of black crocodile clip test line insert to the black **N** interface of the instrument, the other end (crocodile clip) clip to the grounding pile of the leakage protector; one end of red probe test line insert to the red **L** interface of the instrument, the other end (probe) touch the fire wire of the leakage protector's output end to measurement.


Connection 2: the black plug of the dedicated socket test line insert into the **N** interface of the instrument, the red plug insert into the **L** interface of the instrument, the three-pin plug insert into or touch the socket to measurement.

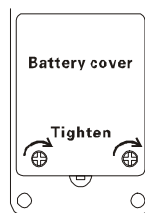
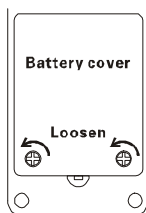
At this time, if the performance of the leakage protector is normal, it will trip breaking, the breaking time displayed in the LCD screen, such as 075ms. If the leakage protector does not trip, **fault** failure information will display in the LCD, it may be the measured rated operating current gear is too small or the leakage protector has some faults. Press the **RESET** key to reset, then can be tested again.



VI. Replacing Battery

	<p>To avoid electric shock, when replacing the batteries, the test line must be pulled away from the instrument, and do not connect with the measured wire.</p>
	<p>Observe the correct battery polarity, otherwise, the instrument will be damaged.</p>
	<p>Replace the battery with a new one as soon as possible when the battery voltage is low.</p>
	<p>Do not mix the old and new battery together.</p>

1. When the battery voltage drops to 4.8V, a  symbol will be displayed on the instrument, indicating the battery voltage is low. Replace the battery immediately.
2. Press the **POWER** key to shutdown the instrument. After confirming that the instrument has been shutdown, open the battery cover and replace with a new battery recommended by the manufacturer. Pay special attention to the correct battery polarity. Replace the battery cover, boot up the instrument and confirm that the instrument can operate properly. (as shown in the following figures).



VII. Accessories

Tester	1 PCS
Shoulder bag	1 PCS
Probe test line	1 PCS

Crocodile clip test line	1 PCS
Socket test line	1 PCS
Packing box	1 PCS
Alkaline dry battery (AAA 1.5V)	4 PCS
User manual ,Warranty card ,Quality certificate	1 Copy



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