

UT586

Operating Manual



Digital RCD (ELCB) Tester

I. Safety Information

In order to correctly use this instrument, please read this manual carefully in detail. This manual includes the safety information related to the safe operation of the Tester, please strictly observe them when using the Tester.

Caution:

1. Please read and understand the contents of this manual before use.
2. Please keep this manual properly. It can be easily used for a test reference when necessary.
3. Ensure to use the instrument in accordance with the test procedures described in this manual.
4. Make sure you have understood the safety information details.
5. Ensure to strictly follow the safety regulations, or otherwise accidents or instrument damage may occur.
6. The Instrument should be operated by qualified and trained personnel and used only as specified in the manual.
7. UNI-T will not be liable for any damage to the instrument or losses caused by misuse or operation not as specified in the manual or the safety regulations.

Safety mark “△” has three meanings in the manual; when reading, user will pay special attention to the operation relating to “△” .

	Danger: Specifies conditions and actions that most likely pose hazards to the user.
	Warning: Specifies conditions and actions that may pose hazards to the user;
	Caution: Specifies conditions and actions that may cause minor injury or damage to the Tester

⚠ Danger

- This instrument is only for the single phase within AC 230V/50Hz (195~253V) .
- When testing, do not touch any bared wire.
- When testing, you can touch the tested conductor only in the safe situation.
- After the test is finished, Please disconnect the test lead from the power supply. Do not leave the test lead connected to the power supply for a long time.

⚠ Warning

- Do not perform the tests with the Tester cover opened, for hazardous voltage may be present. If the Tester work abnormally, please have it checked and serviced by professional personnel.
- If any anomaly happen(eg: missing display, unwanted data, casing damage, test noise, etc), please contact the qualified servicing personnel before proceeding any operation.
- Before using the instrument, if your hand is wet, please do not use it.

⚠ Caution

- please use only the certified test lead supplied with the Tester, prohibit using other kinds of test wires.
- Do not expose the instrument under sunshine, extreme temperature, moisture and other severe environment.
- Clean the Tester with dampened cloth and mild detergent; no abrasives or solvents are allowed.
- When the instrument is wet, please ensure it is dried before storage.

Electrical Symbols

	Marks of danger, warning and caution
	Double or reinforced insulation.
	CE conforms to standard of European Union.

II. Product Features

2.0 Adopt intellectual micro-controller chip to maintain high accuracy, high reliability and stability.

2.1 Wiring inspection (RCD test):

LCD Indication

L-N&L-PE flash

L-PE&N-PE flash, L-N doesn't

L-N&N-PE flash, L-PE doesn't
L-N,L-PE and N-PE flash

The tester will prohibit the tests regarding the above status, except reverse connection between earth and neutral terminals,

2.2 Phase angle selection:

The tests can be performed at positive 0° or negative 180° phase angle.

2.3 Test locked:

When the test lead is disconnected, long press 0°/ 180°() button to enable the test function, then connect the test lead to tested terminals, the tests can be automatically performed.

2.4 AUTO RAMP test:

Measure trip current and trip time simultaneously.

2.5 Over-Range Indication:

If the Tester fails to trip within Max. test time, the display shows “>” icon.

2.6 Data Hold:

The readings will be frozen when the test finishes.

2.7 Maximum current of test is up to 1A (x1 Function).

2.8 Over-heat inspection:

When the related parts inside the instrument are over heated, LCD displays “ ” and the instrument will automatically prohibit the tests, after it is cooled down, LCD does not display “ ” and the tests restart again.

2.9 Backlight :

Press LIGHT() to turn on /off the backlight. When under MANUAL RAMP mode, press the button momentarily to turn on/off the backlight, or long press to access Δ setup.

2.10 Low battery indication:

When voltage of battery is less than 7V, low-voltage sign “ ” is displayed, please change the battery in time;

2.11 Auto power off :

The instrument will automatically power off after ten minutes' idling. To disable the function, press and hold 0°/ 180° button while turning on the instrument.

2.12 Fused protection.

III. Technical Specifications

3.1 Measurement Range and Accuracy:

Temperature: $23 \pm 5^{\circ}\text{C}$

Humidity: 45%~75%RH

Accuracy: $\pm(a\% \text{ of readings} + b \text{ digits})$

Altitude: $\leq 2,000\text{m}$

Function	Working voltage (AC)	Rated Trip Current (I _{on})	Trip Time		Accuracy	
			Trip Current	Trip Time	rdg	dgdt
*1/2	195~253V /50Hz	10/20/30/100/200 /300/500mA/1000mA	0~2000mS	0°/ 180°	-10%~0%	
		10/20/30/100/200 /300mA	0~2000mS	0°/ 180°	0%~+10%	
		500mA/1000mA	0~200mS	0°/ 180°		
		10/20/30/100/200 /300mA/500mA	0~200mS	0°/ 180°	±0.6% rdg ±4dgdt	
		10/20/30/100/200 /300/500/1000mA	0~200mS	0°/ 180°		
*5		10/20/30/100/200 /300mA/500mA	40%~110% of Rated Current, step at 5%; 300ms $\times 5$ 0°/ 180°		-10%~+10%	
		10/20/30/100/200 /300/500/1000mA	0~300ms	0°/ 180°		
Auto Ramp						
Manual Ramp						

Function	Range	Resolution	Accuracy	Input Protection	Remarks
AC voltage	60~400V	1V	$\pm(5\%+2)$	500VAC/700VDC	Input Impedance about 5.9MΩ

⚠ Caution:

- 1. Frequency Range for AC Voltage: 50~60Hz;
- 2. For AC voltage <60V, the reading is for reference only.

3.2 Function Selection

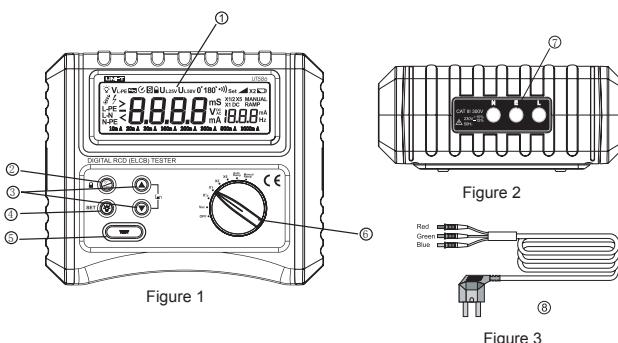
X1/2-----	Non-trip test, check RCD sensitivity
X1-----	Measure trip time
X2-----	Measure fast trip time at $I\triangle n \times 2$ trip current
X5-----	Measure fast trip time at $I\triangle n \times 5$ trip current
AUTO RAMP Test---	Measure trip current
MANUAL RAMP Test--	measure trip time (at setting current)

3.3 Compliances:

- IEC 61010-1 CATIII 300V , Pollution Degree 2
- IEC 61557-1, 5
- IEC 61010-2-31

3.4 Working Voltage: 230VAC (Range: 195~253V)**3.5 Working Conditions:** Temperature: 0°C~40°C
Relative Humidity: ≤80%RH
Altitude: ≤2000m**3.6 Storage Conditions:** Temperature: -20°C~60°C
Relative Humidity: ≤75%RH**3.7 Dimensions:** 210mm x 175mm x 90mm**3.8 Weight:** About 1,000g**3.9 Accessories**

- Test Lead (1.5m)-----1
- Manual-----1
- Gallus/Tool Case-----1

IV. Tester Description and Main Accessory (See Figure1,2,3)

- ① LCD
- ② 0° / 180°/Lock Button
- ③ UP/DOWN Button: Set /Adjust the Current (under MANUAL RAMP)
- ④ LIGHT/SET Button(under MANUAL RAMP)
- ⑤ TEST Button
- ⑥ Rotary Switch
- ⑦ Input Terminals
- ⑧ Test Lead

V. RCD Test**(1) Test Lead Connections**

Connect three connectors of the test lead respectively to three input terminals of the Tester: Red—L, Green—E, Blue—N, then connect another terminal of the test lead to tested circuit (230V/50Hz power socket).

(2) Voltage Test

Set the rotary switch to V position, The tester now can measure the voltage between L and N terminals, which should fall within 195V-253V, if not, please check if the wiring is correct before proceeding into next step

(3) Wiring Check

Turn the rotary switch to RCD ranges and check the wiring status indicated on LCD.

LCD Indication

L&N&L-PE flash

Connection Status

Abnormal power supply or no supply to tested circuits

L-PE&N-PE flash, L-N doesn't

The tested terminals are badly or not earthed.

L-N&N-PE flash, L-PE doesn't

Neutral terminal is disconnected

L-N,L-PE and N-PE flash

Wrong wiring to tested terminals,

The tester will prohibit the tests regarding the above status, please check the wiring and correct the connection before restart the tests.

(4) Press $I\triangle n$ UP(\blacktriangle) or DOWN(\blacktriangledown) button to adjust the trip current($I\triangle n$) the same as the rated trip current marked on RCD.

Default value: $I\triangle n$ 30mA 00(except MANUAL RAMP)

(5) When MANUAL RAMP is selected, the setup value "30mA" shows on lower part of LCD, 40% of 30mA: "12mA" displays on right side, then use UP(\blacktriangle) or DOWN(\blacktriangledown) button to adjust the current within 40%~100% of the setup value at a step of 5%; To change the setup value, long press "SET" button to access current setup, "Set" icon shows on LCD, short press to set to 10mA,20mA, 30mA, 100mA, 200mA, 300mA, 500mA or 1000mA; long press the button to exit the setup.

(6) Taking RCD Tests

6.1 Set the rotary switch to test parameters

- Non-Tripping $\times 1/2$: Max. trip time up to 2000ms
- Tripping $\times 1$: 10/20/30/100/200/300mA,: Max. trip time up to 2000ms 500/1000mA: Max. trip time up to 200ms
- Fast Tripping $\times 2$: Max. trip time up to 200ms
- Fast Tripping $\times 5$: Max. trip time up to 200ms
- AUTO RAMP Test: 40%~110% of rated trip current($I\triangle n$), Max. trip time up to 300ms.
- MANUAL RAMP Test: Max. trip time up to 300ms.

6.2 Press TEST button

- Non-Tripping $\times 1/2$ -----The RCD should not trip.
- Tripping $\times 1$ -----The RCD should trip.
- Fast Tripping $\times 2$: ----- The RCD should trip.
- Fast Tripping $\times 5$: ----- The RCD should trip.
- AUTO Ramp Test: -----The RCD should trip, and trip time and trip current are displayed simultaneously.
- MANUAL RAMP Test-----The RCD should trip.

6.3 Press 0° /180° button to set the phase angle and repeat 6.1 to determine the fastest trip time.

6.4 Press to change the phase angle and repeat 6.1

6.5 When the tests finish, disconnect the test lead from the tested circuit immediately.

⚠ Danger:

Do not touch any exposed earthing metal or conductor during the operation.

(7) Test locked:

When the test lead is disconnected, long press 0° / 180° (\blacksquare)button to enable the test locked function, then connect the test lead to tested terminals, the tests can be automatically performed.

(8) Backlight:

when testing on dimly lighted sites, press LIGHT(\diamond) to turn on /off the backlight. Under MANUAL RAMP mode, press the button momentarily to turn on/off the backlight, or long press to access $I\triangle n$ setup.

(9) Auto Power Off:

To disable the function, press and hold 0° / 180° button while turning on the instrument, LCD will show "APO OFF" icon; the Tester usually defaults at APO ON status(no pressing 0° / 180° button).

VI. Maintenance and Repair**6.1 Cleaning the Casing:**

Do not clean the instrument casing with any corrosive agents such alcohol or solvent that may damage the display. Clean it with dry soft cloth and protect the instrument from any moisture.

6.2 Maintenance

Please contact UNI-T after-sale service center or agents if the following anomaly happens:

- A.Instrument case or parts are damaged.
- B.LCD displays wrongly.
- C.Unexpected data shows even under normal use.
- D.Buttons do not work or produce confusing display.
- E.Noises arise in testing.

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This manual is allowed to be alternated without prior notice.

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