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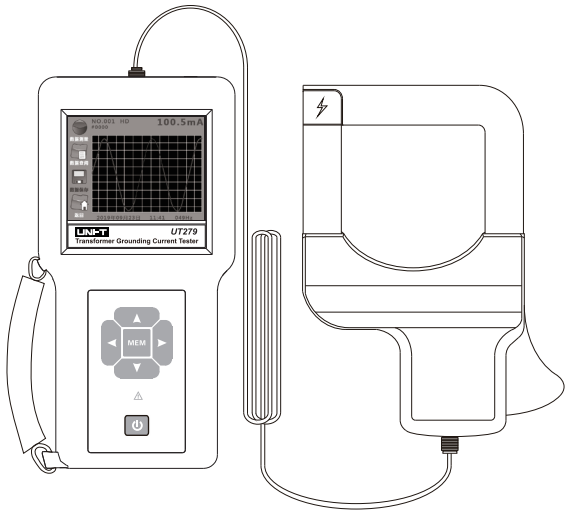


UT279

Operating Manual

Transformer Grounding Current Tester

Contents

Safety Information

Thank you for buying this product, for better use of it, please be sure of the followings:

Read the user manual carefully.

Follow all operating precautions in the user manual.

- Pay special attention to safety use in any case.
- Note the labels, texts and symbols at the tester.
- If the battery power is low, the tester will keep rebooting, please replace battery.
- Do not test circuit with voltage over 600V.
- It is forbidden to use without rear cover and battery cover closed well.
- In case that the case or test lead cracks and then cause exposed metal during use, please stop use immediately.
- Please do not place and keep the tester in places with high temperature/humidity, dews and direct sunlight for an extended period of time.
- Maintain and clean the tester and current clamp in a regular basis, do not wipe them with corrosives and coarse materials.
- Avoid the iron core of current clamp from deforming, deformed iron core will affect testing accuracy.
- Please note the battery polarity when replacing battery, and remove the battery if not used for a long time.
- Use, disassembly and repair must be performed by authorized eligible personnel.
- If danger may occurs due to the tester, please stop using the tester and seal it, then send it to authorized qualified agency for maintenance.

◆ The symbols “ ⚠ ” at the tester and user manual represent danger warning, indicating user must perform safe operation according to the warnings.

◆ The symbol “ ⚡ ” in the user manual represents warning of super danger, indicating user must perform safe operation according to the warnings.

I. Introduction

UT279 Transformer Grounding Current Tester is designed and manufactured to perform on-line test on the grounding current and the leakage current of transformer iron core in power system on site, the tester is designed with current clamp, monitoring software, communication line, etc. The transformer is an important electrical equipment in the power system, if the transformer is malfunctioned, that will cause severe consequence to the power system. The transformer iron core under normal operation is grounded in the way of single point, if grounded in the way of two or multiple points, current loop will occur between the iron core and the ground, the maximum current in the loop can reach several tens of amperes, which will cause partial area of the iron core to be overheated or even burnt. The tester can find out potential fault in transformer, which makes it an ideal tool to ensure safe operation and daily maintenance of transformer. The tester is capable of resisting interference, applicable in environment with strong magnetic field near transformer, mainly used for leakage current test performed on the “clamp” (a device to fix the iron core of electrical equipment) and electrical equipment such as transformer, electric reactor and others in transformer station and power generating plant. The tester also applies to current test and leakage current test of circuits or equipment in electric power, communication, meteorology, railway, oil field, architecture, metrology, scientific research and teaching institute, industrial and mining enterprises, and other fields.

The tester is designed with high-speed microprocessor and 3.5-inch color touch-screen LCD, enabling smart touch operation and easy use, it can display the value and waveform of measured current in real time. With FFT, digital filtering and other technologies employed, the tester makes measured data more accurate. UT279 has multiple functions such as alarming threshold setting and warning indication, data & time and “Setting”, auto power off, setting of numbering of tested object, it is able to save 200 sets of data and waveforms, the stored data can be imported to computer via the USB interface of the tester.

As the iron core of current clamp is made with permalloy and magnetic shielding technology, it is not susceptible to influence and interference from external magnetic field, ensuring continuous measurement of high accuracy, stability and reliability. The internal diameter of the clamp jaw is 80mm×80mm, which allows it to clamp cable or grounding wire of 80mm below, or 96mm×4mm grounding wire of flat steel. The clamp jaw features portable design and realizes non-contact, safe and rapid measurement without the circuit under test disconnected.

The monitoring software has multiple functions such as on-line monitoring in real time, data viewing, data storage, data printing, dynamic display, waveform indication, alarming threshold setting, alarm indication, and more.

II. Electrical Symbols

	Super dangerous! The user must stringently observe the safety regulations, otherwise it may pose a risk of shock and cause personal injury and death.
	Danger! The user must stringently observe the safety regulations, otherwise it may pose a risk of shock and cause personal injury and

	death.
⚠	Warning! The user must stringently observe the safety regulations, otherwise it can cause personal injury or damage to equipment.
⧈	Double insulated
~	Alternating current (AC)
⎓	Direct current (DC)

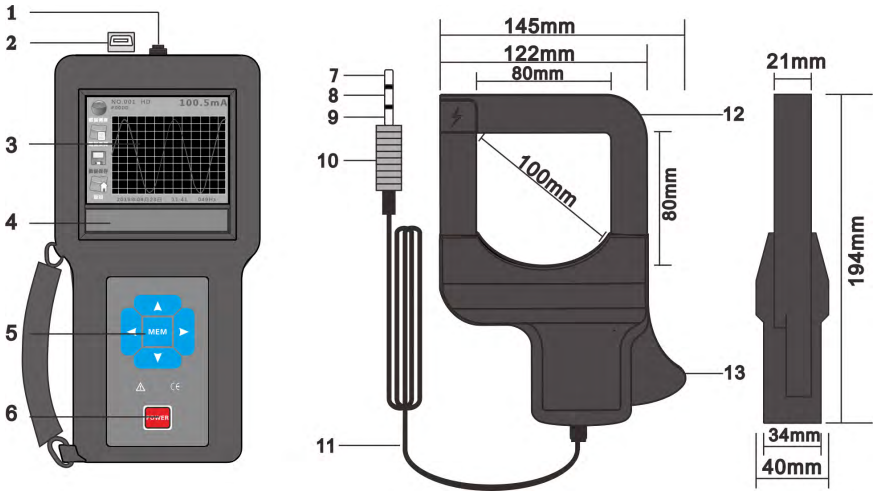
III. Technical Specifications

Function	Grounding current test, AC leakage current on-line test, AC current on-line test.
Power supply	DC 9V alkaline dry battery (LR6 1.5V×6)
Testing mode	Clamp-shaped CT
Jaw size	80mm×80mm (The jaw can clamp 80mm lead, or 96mm×4mm grounding wire of flat steel)
Current range	AC 0.00mA~100A
Resolution	AC 0.00mA~0.99mA; resolution: 0.01mA
	AC 1.0mA~99.0mA; resolution: 0.1mA
	AC 100mA~999mA; resolution: 1mA
	AC 1.0A~100.0A; resolution: 0.1A
Accuracy	±(0.5%+5dgt) 23°C±3°C, <70%RH, test lead is centered within the clamp jaw.
Frequency range	10HZ~1000HZ
Display mode	3.5-inch color touch-screen LCD (320dots × 240dots)
Operating mode	Smart touch and button control
Tester dimension	198mm×100mm×45mm
Current clamp dimension	194mm×145mm×40mm
Weight	Tester: 450g (battery included); current clamp: 780g
LCD size	Display area: 71mm×53mm

Electromagnetic interference	When the current clamp induces electric field of 100A at a distance of 10mm, induced current of 10mA will be generated.
Sampling rate	Once per second
Data storage	200 sets of data (Data will not be lost when battery is replaced or power is down)
Date and clock	Date and clock displays, clock setting
Tested object numbering	Setting of numbering of test points
Auto power off	The tester will power off automatically after it is started up after 5 minutes by default.
Touchscreen calibration	The tester has function of touchscreen calibration.
USB interface	The tester has a USB interface, via which the stored data in tester can be imported to computer.
Alarming setting	Alarming threshold range: 10mA~99.99A
Alarming indication	The LCD flashes and the buzzer sounds when the tested value exceed the alarming threshold.
Voltage of tested circuit	<AC 600V
Overrange indication	“OL” is displayed
Battery voltage	When battery voltage drops to 7.2V±0.1V, the low battery symbol will be displayed, indicating battery replacement. The measured data is accurate under low battery condition.
Rated current	180mA at most
Lead length	2 meters
Operating temperature & humidity	-10°C~40°C; <80%rh
Storage temperature & humidity	-10°C~60°C; <70%rh

Insulation strength	AC 2kV/rms (between screw and casing)
Suitable Category rating	IEC1010-1, IEC1010-2-032, Pollution Class 2, CAT Ⅲ 600V, IEC61326 (EMC standard)

IV. External Structure



1. Connector for current clamp
2. USB interface

3. 3.5-inch color touch-screen LCD
4. Tester
5. ↑↓←→ button and **MEM** button
6. **POWER** button
7. Coil tap
8. Coil tap
9. Shielded layer
10. Audio plug
11. Output lead
12. Current clamp
13. Trigger

V. Operating Instructions

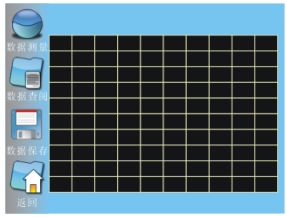
1. Power On/Off

When **POWER** is pressed, the tester will be turned on and the LCD will display the menu. If blank screen occurs and the LCD keeps flashing after the tester is turned on, that indicates the battery power may be low, please press **POWER** to turn off the tester and then replace the battery. The time of powering off the tester automatically can be set, the time range is 000 to 999(min), if the time is set at "000", the tester will not power off automatically. The tester will power off automatically after it is turned on for 5 minutes by default.

2. Data Measurement

In function menu page, press ←→ to move the cursor to "**Data Measurement**" icon, and press **MEM** or tap "**Data Measurement**" icon to enter data measurement page, then press ↑↓ to move the cursor to "**Return**" icon, next, press **MEM** or tap "Return" icon to return to function menu pate.

Menu


Data measurement

3. Clock Setting

In function menu page, press ←→ to move the cursor to "**Clock Setting**" icon, and press **MEM** or tap "**Clock Setting**" icon to enter clock setting page, press ←→ or tap " " icon to move the cursor to year, month, day, hour, minute, press ↑↓ or tap " " icon to adjust date and time. Press ↑↓ to move the cursor to "**Return**" icon, then press **MEM** or tap "**Return**" icon to return to function menu page.

4. Data Storage

In data measurement page, when pressing ← or tapping "**Data Storage**" icon, the tester will enter data storage status and the LCD will display "**NO.XXXHD**", the tester stores the current, waveform, time, tested object numbering to the memory, "NO.XXX" represents the number of groups of stored data, press ← again or tap other icons to exit.

5. Data Viewing

In function menu page, press ←→ to move the cursor to "**Data Viewing**", then press **MEM** or tap "**Data Viewing**" icon to enter data viewing page, press ↑↓ to scroll through data. Press ↑↓ to move the cursor to "**Return**" icon, then press **MEM** or tap "**Return**" icon to return to function menu page.

6. Tested Object Numbering

In function menu page, Press ←→ to move the cursor to "**Tested Object Numbering**" icon, then press **MEM** or tap "**Tested Object Numbering**" icon to enter the page of tested object numbering, press ←→ or tap " " icon to move the cursor, press ↑↓ or tap " " icon to change the numbering of tested object, press ↑↓ to move the cursor to "Return" icon, then press **MEM** or tap "**Return**" icon to return to function menu page.

7. Data Deletion

In function menu page, press ←→ to move the cursor to "**Data Deletion**" icon, then

press MEM or tap "**Data Deletion**" icon to enter data deletion page. When the cursor is at "**Yes**", press MEM or tap "**Yes**" icon to delete the stored data. If pressing MEM or tapping "**No**" icon when the cursor is at "**No**", the stored data will not be deleted and the present page will return to function menu page. Press ↑↓ to move the cursor to "**Return**" icon, then press MEM or tap "**Return**" icon to return to function menu page.

	**Data cannot be recovered after deletion!**
	The operation of data deletion represents all stored data are deleted at a time.

8. Touchscreen Calibration

In function menu page, press ←→ to move the cursor to "Touchscreen calibration" icon, and press MEM or tap "Touchscreen calibration" icon to enter touchscreen calibration page, then tap the symbol "+" in sequence. Return to function menu page after calibration.

9. Power-off Time Setting

In function menu page, press ←→ to move the cursor to "**Power-off Time Setting**" icon, then press MEM or tap "**Power-off Time Setting**" icon to enter power off setting page, press ←→ or tap "←→" icon to move the cursor, press ↑↓ or tap "↑↓" icon to change the power-off time, the tester will not power off if the time is set at "000", press ↑↓ to move the cursor to "**Return**" icon, then press MEM or tap "**Return**" icon to return to function menu page. The time of powering off automatically is set at from 000 to 999 minutes, the tester will automatically power off after it is turned on for 5 minutes by default.

10. Alarming Setting

In function menu page, press ←→ to move the cursor to "**Alarming Setting**" icon, then press MEM or tap "**Alarming Setting**" icon to enter alarming setting page,

press ←→ or tap“←→” icon to move the cursor, press ↑↓ or tap “↑↓” icon to change the alarming threshold, press ↑↓ to move the cursor to “**Return**” icon, the press **MEM** or tap “**Return**” icon to return to function menu page. The scope of alarming threshold is 00.00A~99.99A.

⚠	**The default alarming threshold at startup is “00.00”A, which means the tester will not alarm.**
	The buzzer sounds if the current exceeds the alarming threshold.

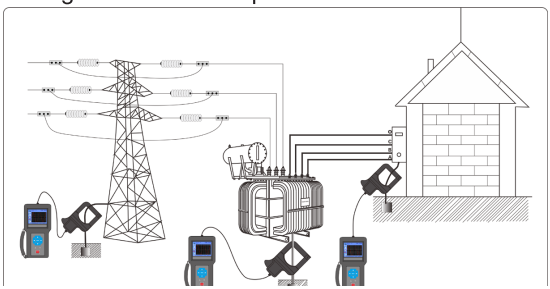
11. Current Waveform Testing

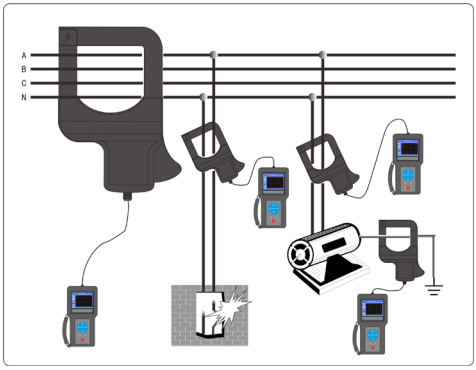
⚡	**Danger! Electric shock! Operation must be performed by authorized trained eligible personnel, the operator must stringently observe safety regulations. Otherwise it may pose a risk of electric shock and cause personnel injury or equipment damage.**
	Do not test circuit with voltage of over 600V, otherwise it may pose a risk of electric shock, cause personnel injury or equipment damage.

1) Connect the current clamp and the tester, then turn on the meter to enter “**Data Measurement**” mode.

2) Clamp the measured circuit through the current clamp, then observe the reading, if “**OL**” is displayed, that indicates the measured current exceeds the upper limit specified by the tester.

3) The tester has a function to zoom in/out the waveform, do not judge the current value according to waveform amplitude.





⚠	**To measure the leakage current of the grounding wire of electrical equipment, please clamp the grounding wire.**
	To measure the current of the circuit, please clamp the live or neutral wire individually.
	To measure single-phase leakage current, please clamp the live and neutral wires together.
	To measure the leakage current of 3 three-phase wires, please clamp the 3 three-phase wires.
	To measure the leakage current of 4 three-phase wires, please clamp the 4 three-phase wires.
	To measure the leakage current of 5 three-phase wires, please clamp the 5 three-phase wires.
	For safety, please remove the measured lead from the tester after high voltage/current test.

12. Monitoring in Real Time

Turn on the tester to enter test status, connect the tester with the computer via the equipped USB communication cable, operate the **monitoring software** installed

in computer, if the communication is normal, the computer can monitor on-line current in real time.

The **monitoring software** has multiple features such as on-line real-time monitoring, history querying, dynamic display, waveform indication, alarming threshold setting and alarming indication, and has multiple functions including data reading, access, storage, printing, etc.

13. Data Downloading

Please follow the operating steps below:

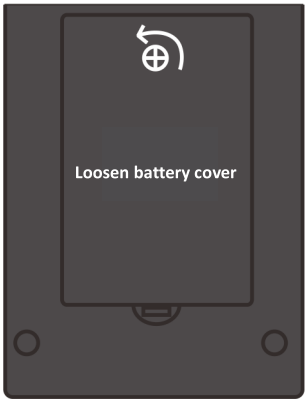
- Install the USB driver and “Monitoring Software”.
- Connect the tester with computer via the equipped USB communication cable.
- Turn on the tester.
- Allow the monitoring software to operate.
- Select history querying and read the data.

VI. Battery Replacement

⚠	**Install battery according to the correct polarity, otherwise it may cause damage to the tester.**
	If the battery power is low, please replace it immediately.
	New and used batteries cannot be applied together.

1) When the battery voltage is 7.2V±0.1V below, the tester will display low battery symbol to indicate insufficient battery power, please replace the battery.

2) Press **POWER** button to turn off the tester, and open the battery cover after the tester is confirmed power-off, then, replace the batteries with new qualified ones and close the battery cover, last, turn on the tester to confirm if the replacement is complete. Please pay special attention to battery specification and polarity. (See figures below)



VII. Packing List

Item	Quantity (pcs)
Tester	1
Current clamp	1
USB cable	1
Tester box	1
Alkaline dry battery (AAA 1.5V)	6
User manual	1

The company is not responsible for other losses caused by use.

The content of this user manual cannot be used as a reason for using the product for special purposes.

The company reserves the right to modify the contents of the user manual. If there are changes, no further notice will be given.