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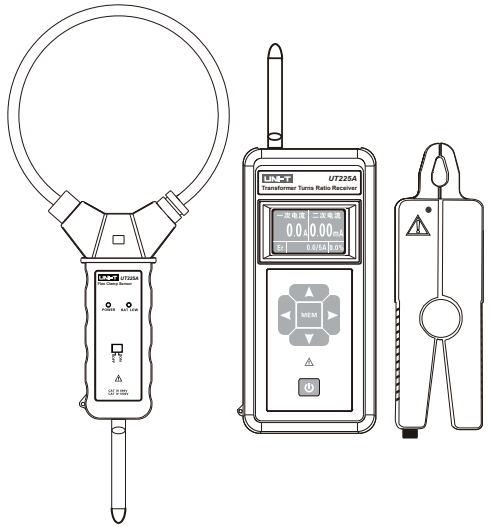


UT225A

Operating Manual

Low Voltage Transformer Turns Ratio Tester

Contents

I. Introduction

UT225A Low Voltage Transformer Turns Ratio Tester is extensively applied to 380/220V power system. It can be used to perform fast on-site detection on the current transformer of metering device, and to measure current and leakage current in 380/220V power system. Without the need to shut down the power, the tester enables accurate testing on the actual transformer ratio, phase type and polarity of current transformer during operation.

UT225A consists of tester, primary current transformer (CT1) and secondary current transformer (CT2). With small clamp diameter at 8mm, UT225A is suitable to use in narrow space and environments with concentrated cables, making it a safe, accurate and portable measurement meter for technicians. The application of the tester can create significant economic and social benefits for power enterprises to manage the use of power.

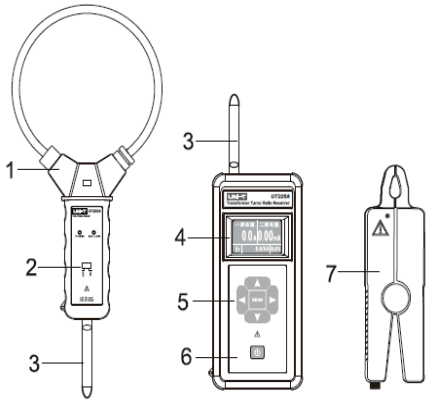
The primary current transformer (CT1) sends testing data via wireless transmission, with transmission distance of 100 meter.

II. Model

Model	Primary current transformer (CT1)	Secondary current transformer (CT2)	Transformer turns ratio	Angle difference	Connection mode of primary current clamp and tester
UT225A	0.0A~3000A	0.00mA~5A	1~500	--	Wireless transmission

III. Product Structure

UT225A consists of tester, primary current transformer (CT1) and secondary current transformer (CT2). The primary current transformer (CT1) sends testing data via wireless transmission, with transmission distance of 100 meter.



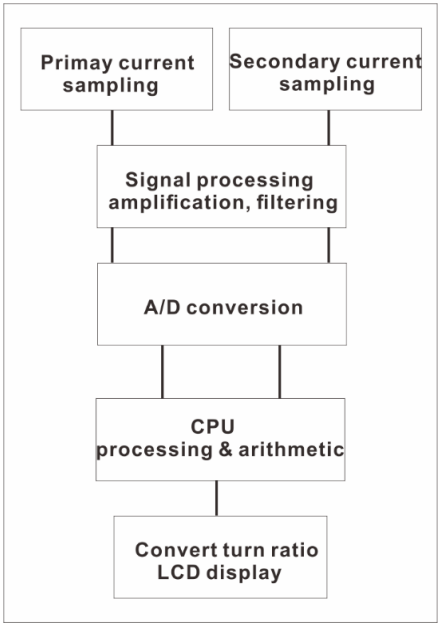
Primary current clamp(CT1) **Host meter** **Secondary current clamp(CT2)**

1. Primary current transformer (CT1)
2. Switch of primary current transformer
3. Antenna
4. Display screen
5. MEM buttons (5 pcs)
6. Tester
7. Secondary current transformer (CT2)

IV. Working Principle

In 380/220V power system, without the need to shut down the power, perform sampling on primary and secondary loop current of current transformer by using CT1 and CT2, conduct signal processing, amplification, filtering and A/D conversion, and then input to the central processing unit of the tester. The CPU analyzes and processes the A/D signals from both channels, then the tester displays transformer ratio and ratio difference converted at secondary current of 5A, thus enabling safe and fast detection on variation and angle difference of current transformer during operation.

The working principle is shown in the diagram below:



V. Standard Condition

Influence quantity	Standard condition	Working condition	Remark
Ambient temperature	23°C~±5°C	-15°C~50°C	
Ambient humidity	40%~60%	<70%	
Distortion of sinusoidal wave	1%	3%	
Signal frequency	50Hz±5Hz	45Hz~65Hz	
External electric and magnetic fields	Shall be avoided		
Position of measured conductor	Place the measured conductor at the center of the clamp jaws		

VI. Technical Parameters

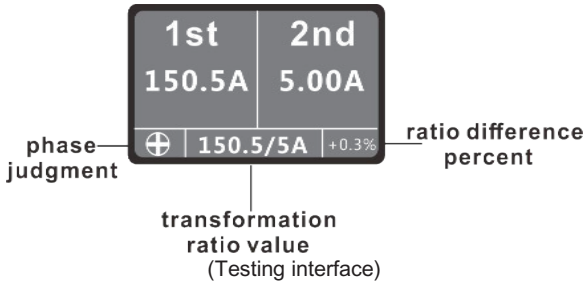
Function	Identify current, turns ratio, polarity and phase type of primary and secondary circuits of low-voltage current transformer
Measurement accuracy of primary current transformer	Range: 0.0A~3000A Resolution: 0.1A

	Accuracy: ±1%FS
Measurement accuracy of secondary current transformer	Range: 0.00mA~5A Resolution: 0.01mA Accuracy: ±0.5%FS
Measurement range of transformer ratio	1~500
Resolution of transformer ratio	0.1
Dimensions of primary current transformer	CT size: 200mm External dimensions: 200mm×370mm×40mm
Dimensions of secondary current transformer	Clamp jaw size: 8mm External dimensions: 137mm×40mm×19.5mm
Tester dimensions	78mm×165mm×42mm
Product weight	800g
Battery specification	7# alkaline dry battery (1.5V×4)
Storage data	About 3000 groups
Sampling rate	3 times per second
Battery voltage	If the battery voltage is lower than 4.8V, the symbol "⊟+" is displayed to indicate replacing battery.
Overload indication	The symbol "OL A" is displayed if overload occurs.
Auto power off	About 15 minutes
Transmission distance of primary current transformer	Wireless transmission distance: 100 M
Lead of current transformer	Length: 2 M
Operating temperature and humidity	-10°C~50°C; <70%RH
Storage temperature and humidity	-10°C ~60°C; <70%RH
Insulation strength	AC 3700V/rms (between the core of clamping jaw and the casing)

VII. Application

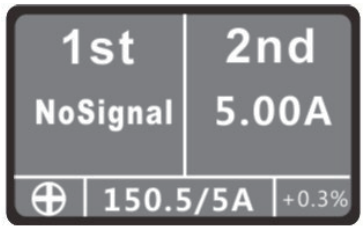
1. Power On/Off

When "⏻" is pressed, the tester is powered on and the main interface is displayed on the LCD, when pressed again, the tester is powered off.



(Testing interface)

Under wireless reception state, the CT1 is in power off state, or fails to connect with tester via wirelessly due to signal interference, then “No signal” indication appears on the LCD.

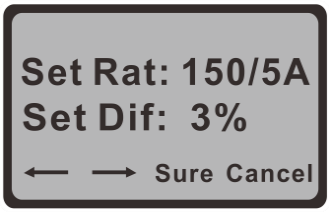


(Wireless reception failed)

After the tester powers on for 15 minutes, the LCD flashes continuously to indicate auto power off. The tester automatically powers off after the LCD flashes continuously for about 30 seconds. If the LCD flashes continuously, press “⏻” so as for the tester to continue running.

2. Setting of Transformer Ratio and Ratio Difference

After the tester is powered on, press “ ” to set transformer ratio and ratio difference. Press “ ” and “ ” to adjust the value (long press “ ” and “ ” to adjust the value by ±10 digits), press “◀” and “▶” to move the cursor, press “MEM” to confirm and return.



(Setting of Transformer Ratio and Ratio Difference)

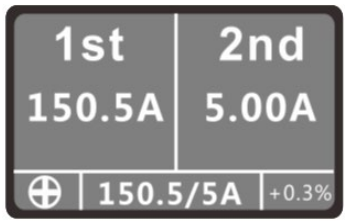
For example, set the transformer ratio at 150/5A and the ratio difference (error) at 3%. The set transformer ratio shall be consistent with the value on the nameplate of the current transformer. If the actual tested ratio difference exceeds the set error, the symbol “OL” appears on the bottom right of the LCD.

3. Transformer Ratio Testing

Refer to the on-site wire connection diagram:

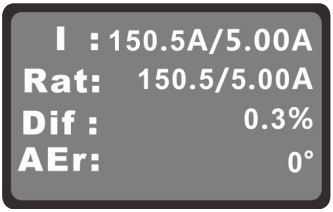
Power on the tester, clamp primary and secondary circuits through CT1 and CT2 respectively, then the LCD will show current, phase identification, polarity, transformer ratio and ratio difference converted at secondary current of 5A.

For example, set the transformer ratio at 150/5A, test in-phase positive circuit, the primary current is 150.5A, secondary current is 5.00A, then the converted transformer ratio is 150.5/5A and the ratio difference is 0.3%.
Since: (150.5-150)/150*100% = 0.3%



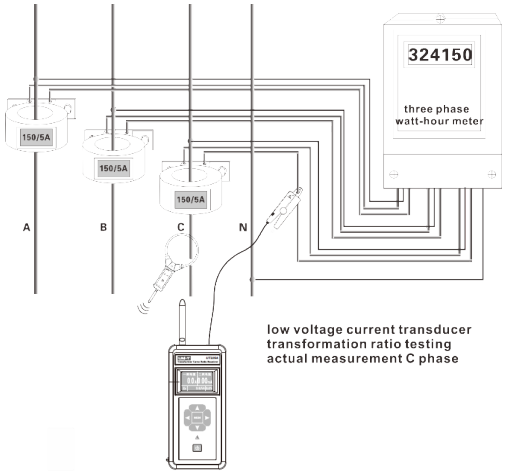
(Testing interface)

In normal testing interface, long press “MEM” for about 2 seconds to enter angle difference parameter interface, to view primary and secondary currents. If the phase difference is about 0°~30° or 330°~360°, it is in-phase polarity; if the phase difference is about 150°~210°, it is out-phase, the phase of the current lead clamped by CT1 and CT2 are not in-phase. Long press “MEM” again for about 2 seconds to exit angle difference parameter mode and return to testing mode.



(Angle difference parameters)

On-site wire connection diagram:



	【**In-phase**】: If the phase difference is about 0°~30° or 330°~360°, it is in-phase polarity.
	【**Out-phase**】: If the phase difference is about 150°~210°, it is out-phase, the phase of the current lead clamped by CT1 and CT2 are not in-phase.
	【**Er**】: Failure to identify normally. This may be caused by low current amplitude, co-frequency signal interference, or others.

4. Data Lock/Storage/Unlock

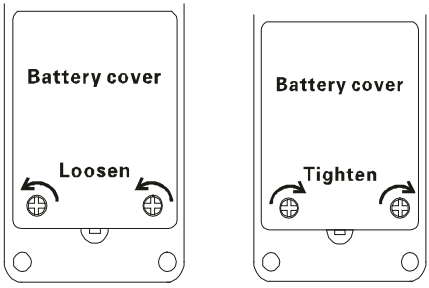
When "◀" is pressed during testing, the displayed data is locked, the symbol "HOLD" is displayed, and the locked storage data is numbered automatically. When pressed again, the data is unlocked, the tester returns to testing mode, and the symbol "HOLD" appears. The tester can store about 3000 groups of data at most.

5. Data Viewing/Deletion

Press "▶" to view data, and to display the stored data of "0001" group automatically. Press "◀" and "▶" to move the cursor, press "MEM" to confirm and return. The tester is designed with fast viewing function ("+1, -1, +10, -10"), press "MEM" once to view data by increment/decrement, move the cursor to "+10, -10" and hold down "MEM" to view data by increment/decrement at 100. To exit data viewing mode and return to testing mode, please move the cursor to "Return" and then press "MEM".

6. Battery Replacement

If the battery voltage of the tester is lower than 4.8V, the low battery symbol "⊏+" is displayed to indicate replacing battery. Loosen the two screws at the battery cover, open the battery cover, replace with new battery (Note the battery specification and polarity), rejoin the battery cover, and then tighten the screws.



VIII. Precautions

1. Do not place or keep the tester in environments with high temperature, high humidity, dews and direct sunlight for a long time.
2. Remove the battery when not used for a long time.
3. Leave the clamp jaws away from dirt and dust, make sure the clamp jaws open and close in place.
4. Avoid impact on the clamp jaws, perform regular maintenance on the tester. Wipe the tester through soft cloth (i.e. cloth for glasses) dipped with anti-rust dehumidifying lubricant (i.e. WD-40), do not use corrosive agent or coarse material!
5. Avoid interference of electromagnetic field during testing.

IX. Packing List

Tester	1 pc
Primary current transformer (CT1)	1 pc
Secondary current transformer (CT2)	1 pc
Tool bag	1 pc
Strap	1 pc
Battery (AAA 1.5V alkaline dry batter)	4 pcs
Battery (6F22 9V)	1 pc
User manual	1 pcs

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

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

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