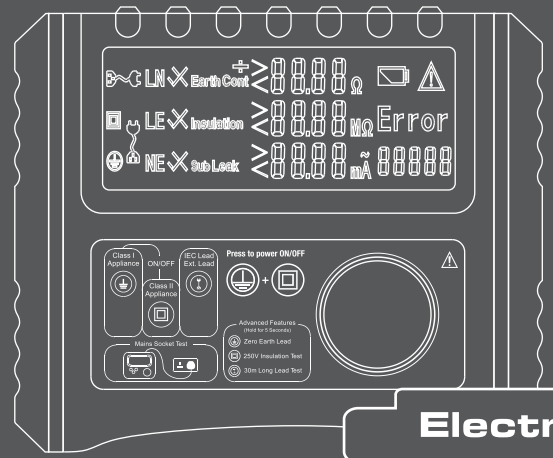
UT528/528AU

Operating Manual



Electrical Testers

REV.0
DATE:2018/11/01
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UT528/528AU PAT Tester Manual

Overview - UT528/528AU

The UT528/528AU is a handheld, battery powered Portable Appliance Tester suitable for carrying out electrical safety tests on:

- Class I Appliances
- Class II Appliances
- Testing IEC and Extension Leads (Including Surge Protected) and long leads
- Mains Socket Earth Continuity, Insulation Resistance and Polarity Test

Unpacking the Unit

Open the case and take out the PAT tester. Check the following items carefully to see if any parts are missing or damaged. If you find any missing or damaged parts please contact the supplier you bought the UT528/528AU from.

* UT528/528AU Main Unit	1 x
* Operating Manual	1 x
* Earth Bond Lead	1 x
* Alligator Earth Bond Clip	1 x

- ⁎ Earth Nulling Block 1 x
- ⁎ Neck strap 1 x
- ⁎ IEC Lead 1 x

Safety Information

⚠ Warnings - Please be aware of the following warnings.

- Before using the unit and test leads inspect both items. Do not use the unit and test leads if they are damaged or the case is broken or damaged as this could result in electrical shock.
- Replace the battery as soon as the battery indicator "▭"appears. Low battery levels may produce inaccurate readings.
- Do not use or store the unit in high temperature, humid, flammable or electromagnetic environments as damage and incorrect readings may result.
- If the tester requires repair or replacement please contact your local service center.

Declaration of Conformity

Uni-T manufactures this product and declares that this product conforms to the

following standards:

BS EN 61326: 2013

Electrical equipment for measurement, control and laboratory use

BS EN 61010-1:2010

Safety Requirements for electrical equipment for measurement, control, and laboratory use – Part 1

4mm banana test lead (CAT III 600V)

Alligator clip (CAT III 600V or CAT IV300V)

Product Layout – UT528/528AU

1.Connection Symbol

2.Mains Socket Polarity 1. Live Neutral (LN) 2. Live Earth (LE) 3. Neutral Earth (NE)

3.Pass / Fail Symbols

4.Resistance of Earth / Protective Conductor

5.Resistance of the Insulation

6.Units

7.Low Battery Symbol

8.Warning Symbol

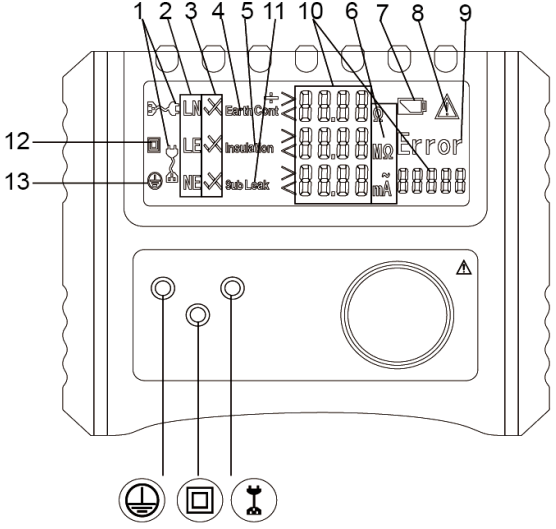
9.Unit Error

10.Readings and Cable Results

11.Leakage Current

12.Double Insulated / Class II Test

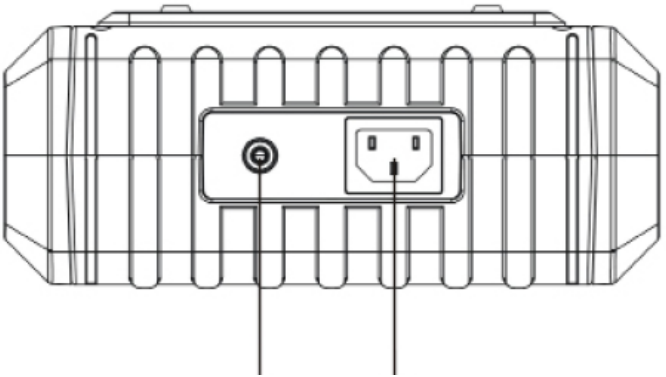
13.Class I Test



Class I Test Button + Zero/Null Selection

Class II Test Button + 250V/500V Insulation Selection

IEC / Cable Test Button +30m Long Lead Selection



Earth Probe Mains / IEC testing

Front Panel Operation

1: Press  button to Power ON / Power OFF.

2: Press  button when testing a CLASS I Appliance.

3: Press  button when testing a CLASS II Appliance.

4: Press  button when performing Cord / Extension Lead testing.

Advance Features

5. Press and hold the  buttons to activate the 250V/500V and 0.1Ω/0.2Ω/0.3Ω earth continuity Pass/Fail Values setup.

Before Testing - Zero the Earth Bond Test Lead!

Plug the earth probe into the rear of the unit and connect it to the earth nulling adapter. Plug the earth nulling adapter into the front panel earth socket to complete the circuit.

Press and hold the  button for 5 seconds to zero the earth bond reading using the earth bond lead and the nulling adapter together in the front test socket.

This will null the earth reading of the test lead and “GOOD” will be displayed once complete. It is good practice to do this once prior to carrying out testing.

Auto Switch Off

The unit will automatically switch off after approximately 2 minutes if no buttons are pressed.

Testing a Class 1 Appliance

Plug the appliance into the UT528/528AU panel main socket. Plug the earth test lead into the socket on the UT528/528AU end panel. Connect the earth crocodile clip to an

exposed metal part on the appliance as shown in Diagram 3.

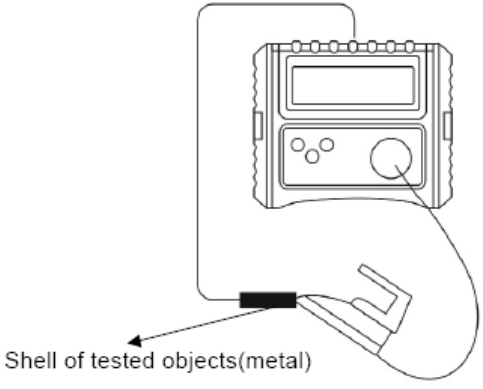


Diagram 3

1. Earth / Protective Conductor Test

Press the Class 1 test button ⏚ to start the test. The earth resistance test will begin.

If the earth resistance measured is greater than 0.2Ω,the meter will display “× Earth Cont”, which is a FAIL. If this occurs, re-check the connections between the pin of the plug to the bodywork of the appliance and that the crocodile clip is attached to clean earthed metalwork on the appliance (try attaching the clip to an alternative piece of metalwork). If all connections are ok the appliance earth connection may be faulty.

The PASS mark for the earth bond test is 0.2 Ω for a Class 1 appliance.

If the reading is less than 0.2Ω , the meter will display “√ Earth Cont”, which is a PASS.

The unit will then automatically attempt to proceed to the insulation test. If it detects that the appliance’s power switch is in the ON position it will carry out the insulation test automatically.

If this is not detected the unit will display a flashing  symbol and also “LO LOAD”. Press the button to proceed to the insulation test.

2. **Insulation Resistance Test**

   Before the unit carries out the insulation test it will attempt to check that the connected appliance's power switch is in the ON position.

   If it detects that the appliance switch is in the ON position it will automatically carry out the insulation test.

   Note: most electronic appliances will have electronic ON/OFF switches and even though they are switched on the "Check Connections" message will still appear.

   If the measured resistance is greater than 1MΩ, the meter will display "√ Insulation" as a PASS rating.

   If the insulation of the appliance is less than 1MΩ, it will display "× Insulation" as a FAIL rating.

   Leakage Test

3. After the unit has completed the insulation test it will automatically proceed to the leakage test.

If the measured leakage is less than 5mA, the meter will display "√ Sub Leak" as a PASS rating.

If the measured leakage is greater than 5mA, it will display "× Sub Leak" as a FAIL rating.

Final Result

4. After the above tests are completed, the meter will indicate whether the appliance has Passed or Failed the tests.

⚠ Note: To interrupt a test press any other key whilst carrying out the tests.

Testing a Class 2 Appliance

Plug the appliance into the UT528/528AU panel main socket. Plug the earth/insulation test lead into the socket on the UT528/528AU end panel. Connect the earth test probe to an exposed part on the appliance as in Diagram 4.

To start a test on a Class 2 appliance press the  button.

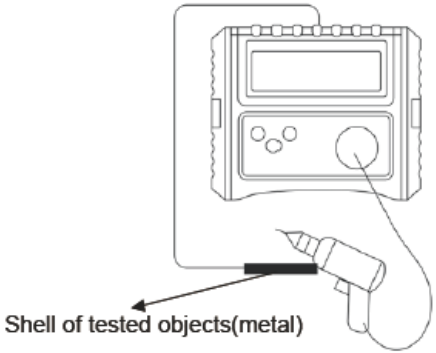


Diagram 4

Class 2 Pre-Check

If the unit detects that the appliance appears to be Class 1 as it detects an earth connection (possibly as a result of a connected earth clip) it will display a flashing ⏚ symbol and you will be prevented from carrying out the Class 2 test. Test the appliance instead using the Class 1 test.

Insulation Resistance Test – Class 2 Appliance

Before the unit carries out the insulation test the unit will attempt to check to

see if the appliance is in the ON position.
If it detects that the appliance switch is in the OFF position it will wait and display a flashing  symbol.

If you are sure that the appliance is switched ON press the  button again to start the test.

Note: most electronic appliances will have electronic ON/OFF switches and even though they are switched on the flashing  will still appear.

If the measured resistance is greater than 2MΩ, the meter will display "√ Insulation" as a PASS rating.

If the insulation of the appliance is less than 2MΩ, it will display "× Insulation" as a FAIL rating.

Leakage Test

5. After the unit has completed the insulation test it will automatically proceed to the leakage test.If the measured leakage is less than 5mA, the meter will display "√ Sub Leak" as a PASS rating.If greater than 5mA, it will display "× Sub Leak" as a FAIL rating.

Class 2 FE

The FE stands for Functional Earth and the test is carried out using only the centre Class II button on the unit.

Plug the appliance under test into the mains socket on the front panel of the unit and connect the earth test probe from the unit to an exposed metal part on the appliance under test. If the unit detects an earth path then the display "CL2 FE" (if it does not detect an FE it will not display this message and will carry on with a normal Class II test)

Final Result - Class 2

After the above tests are completed, the meter will indicate whether the appliance has Passed or Failed the Class 2 test.

Testing an IEC Lead / Extension Lead / Cord Test

Plug the mains lead under test into the socket and the front panel mains socket on the unit as shown in Diagram 5.

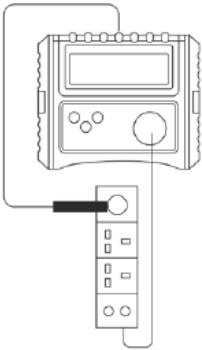


Diagram 5

To Start the Cord Test Press

1. Earth Bond Test

The unit will carry out an earth bond test in the same manner as a Class 1 appliance. The Pass mark for this test is less than the setup value(0.1,0.2,0.3Ω).

2. Insulation Test

The unit will then carry out an insulation test as previously discussed in the manual. The PASS Mark for this test is 2 MΩ.

Note: when testing Surge Protected Extension Leads this test may fail. This is normal and a result of circuitry within the surge protection device.

3. Polarity Test

The polarity test is the final test to be carried out and will check that the cord or extension is wired correctly. It will check for open circuit, short circuit or Line / Neutral reversal.

If the Polarity is correct then the meter will display “LN√, LE √, NE√ PASS”.

If the Polarity test detects a fault, the meter will display “FAIL” and which polarity is fault.

4. **Overall Result**

After the above measurements are completed, the meter will indicate whether the measured appliance is compliant with the requirements of cord testing with “PASS” or “FAIL”

Testing a Surge Protected Extension Lead or Appliance

When you press and hold the  +  buttons for 1 sec the tester will go

into setup mode which can set up the 250V /500V test voltage and

0.1Ω/0.2Ω/0.3Ω earth continuity Pass /Fail value, the  button to change

Pass /Fail value and the  button to change test voltage,and the 

button to save and turn back.

The insulation test voltage reduces from 500V to 250V to allow for the testing of surge protected appliances and leads.

Note: Each insulation test carried out will be the setup values. If want to change this setup mode, you need to re-set up the values again.

Checking a Mains Power Supply

The unit comes complete with a built in soket tester which will check to ensure

that the socket is wired correctly.

Connect an IEC lead to the mains socket and plug this into the back of the meter as shown in Diagram 6.

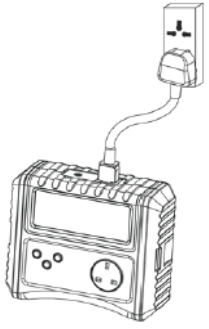


Diagram 6

1）If the Live and Neutral in the socket wiring are reversed or there is a fault with the protective earth connection this is indicated as “LN√, LE×, NE×, FAIL”.

2）If there is a fault with the neutral connection this is indicated as “LN×, LE√, NE×, FAIL”.

3）If the mains socket wiring is correct the display will show “LN√,LE√, NE√, PASS”.

Earth Continuity

Pass Limit& Accuracy	±(5%+2)
Test Current	200mA minimum
Test Voltage	5V nominal

Insulation Resistance

Pass Limit & Accuracy	±(5%+2)
Test Voltage	Default: 250V, Selectable: 500V
Test Current	>1mA 250k
Test Current	<2mA 1k

Leakage Current

Accuracy	±(5%+2)
Test Voltage	40Vrms,50Hz AC
Test Current	<5mA 2k

Factory Default PASS/Fail Limits

	Class I		Class II		Cord	
	UT528	UT528AU	UT528	UT528AU	UT528	UT528AU
Earth Continuity	0.1/0.2/0.3 ohm		N/A		0.2 ohm	1 ohm
Insulation Resistance	1.0Mohms		2.0 Mohms	1.0 Mohms	2.0 Mohms	1.0 Mohms
Leakage	5mA	N/A	5mA		N/A	

Remarks (UT528AU Only):

Earth Continuity: Class I ≤ the setup value, Cord≤1 Ω is PASS.

Insulation Resistance ≥1.0MΩ is PASS.

Leakage: Class II ≤5mA is PASS.

	Cord Size/ Current Rating		
length	0.5mm^2/(3A)	1.0mm^2/(10A)	1.25mm^2/(13A)
5m	0.20	0.10	0.10
10m	0.40	0.20	0.20
25m	1.00	0.50	0.40

Table 1: Approximate resistance of protective earth conductors.

Maintenance

Battery Replacement

When the low battery symbol ""appears, replace the batteries by:

1) Disconnecting all test leads before battery replacement.

2) Power off the unit.
3) Unscrew the battery cover.
4) Use 6 C cell 1.5V R14 batteries or UM2 batteries.
5) Ensure the polarity of the batteries is correct.
6) Re-attach the battery cover.

Cleaning

Clean only with a dry cloth; do not use solvents.

Before use, ensure unit is clean and dry; visually inspect all leads, connectors, and case. Any damage or wear must be rectified to preserve user safety.

Maintenance & Service

This unit should be calibrated and repaired by an authorized service center.

To ensure the accuracy of the device it must be calibrated annually.

There are no user serviceable parts.

Environmental rating

Operating temperature range 0°C to 40°C,