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Datasheet

UTL8500+/UTL8500X+ Series DC Electronic Load

V1.0

2024/04

1. Main Features

- 4.3 inch LCD, all the test results can be observed directly
- Synchronous sampling of 500 kHz, 10Hz, 10uA, 0.1 mV stable resolution output
- Dynamic mode (DYNA) of 50 kHz pull load, the waveform of current and voltage peak can be observed directly (UTL8500X+ series), Vpp, Ipp measurement
- Realistic simulation of LED function
- Basic mode: CC, CV, CR and CP
- Supports OCP test and maximum power test
- Supports time measurement (TIME)
- Supports OVP test
- Supports intelligent and programmable automated list test (LIST)

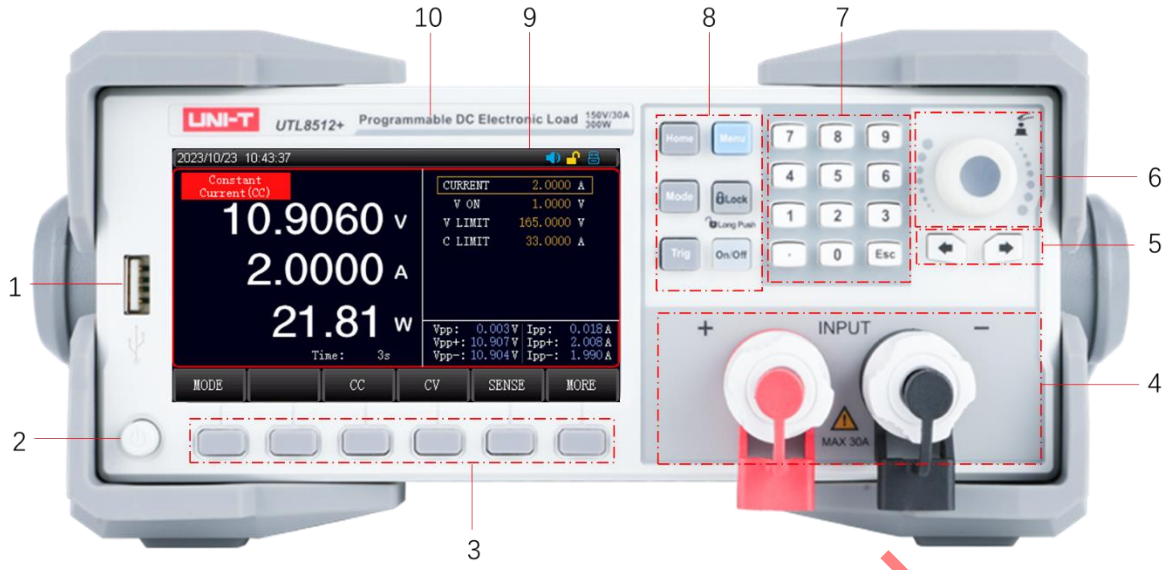
2. Product Overview

UTL8500+ and UTL8500X+ series DC electronic load are a new generation of intelligent, large-screen and cost-effective electronic loads. The synchronizing sampling is up to 500 kHz, with high-performance DSP processing, built-in self-adaptive voltage and current waveform display (UTL8500X+ series), convenient for transient testing and multi-faceted intelligent simulation and analysis. Fast, efficient, visualized LIST programmable automated test modes for most R&D and test needs.

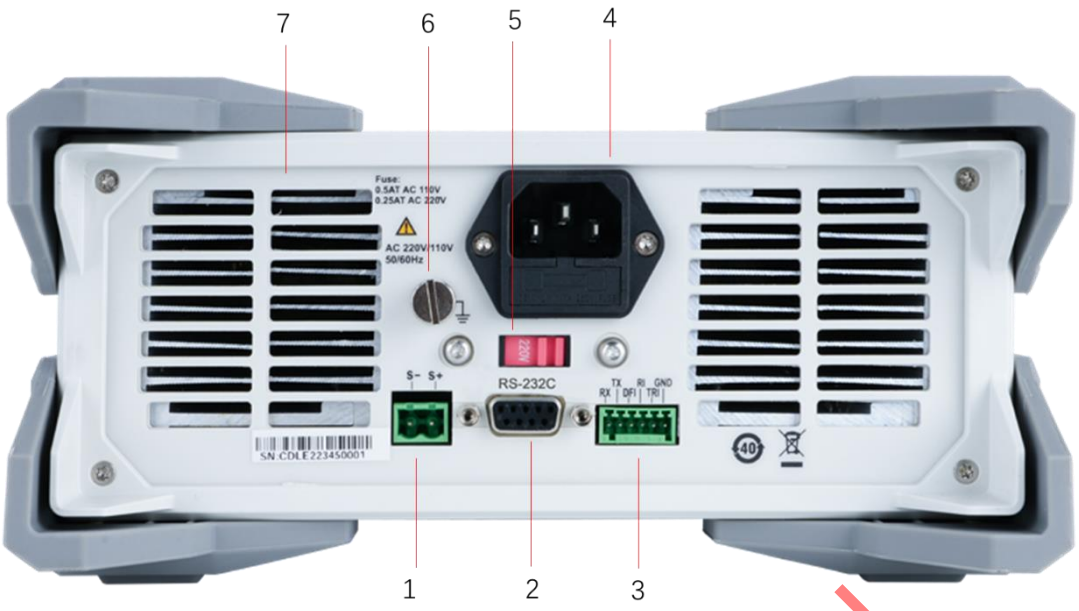
Automatic application: power, charger, driver, batter

Serial connection application: overcurrent test, programmable constant current, 5 1/2 digit ampere meter, current waveform detection

Other applications: LED simulation, battery simulation, intelligent and programmable automated test



No.	Name	Description
1	USB HOST	Connect USB to save and load the file, screenshot and save measured data
2	Power switch	Turn on/off the electronic load
3	Screen function softkey	Six softkeys to select and control parameters, each with its own function
4	Test terminal	Connect on-load power To avoid damage to the device, do not connect in reverse.
5	Arrow key	Move the cursor
6	Rotary knob	Move the cursor or adjust the numeric value of selected parameter
7	Numerical keyboard	Enter number Esc: exit the current page
8	Quick function key	Home: back to home page Mode: select a test mode Lock: lock key (long press to unlock/short press to lock) Menu: enter the system setting Trig: trigger control /short-circuit test (SHORT) On/Off: control the input state of load ON/OFF
9	Screen	Display setting and measurement interface
10	Nameplate	Brand and model

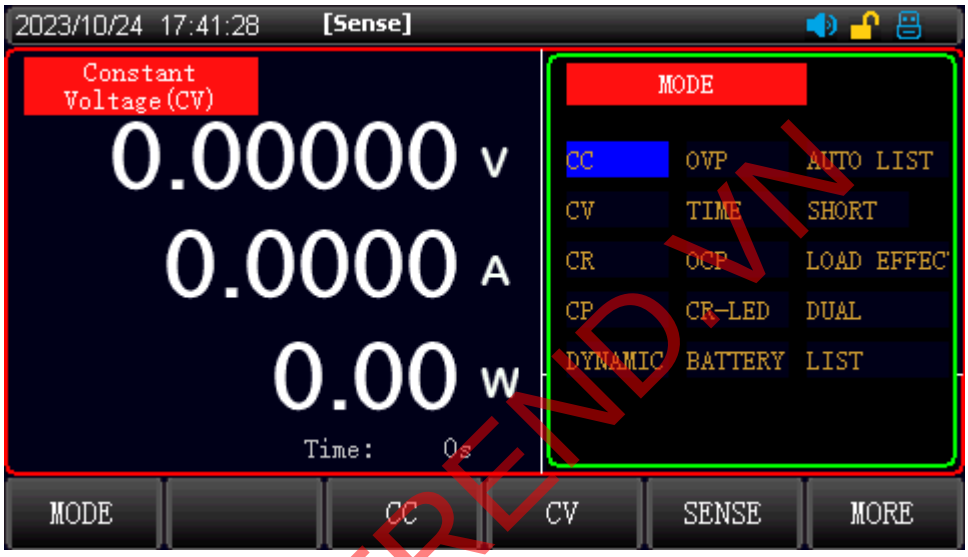


No.	Name	Description
1	SENSE terminal	Sampling measure the accurate voltage at the output terminal of DUT
2	RS-232C interface	RS232 communication
3	HANDLER interface	External trigger
4	Power socket	AC power supply (built-in fuse)
5	AC 220/110 V power switch	Voltage switch of AC power supply
6	Ground terminal	Ground connection
7	Heat emission hole	Cooling

3.Design Highlights

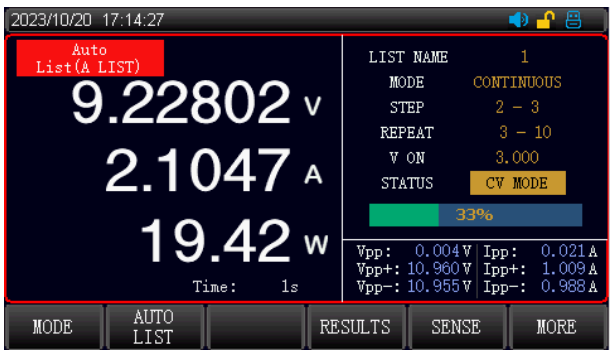
Multiple Modes

The electronic load has four constant test mode, which are CC (constant current), CV (constant voltage), CR (constant resistance) and CP (constant power). In addition, it has 11 kinds of other modes, which are dynamic, OVP, time, OCP, CR-LED, battery, automatic list, short-circuit, load effect, combination and list.



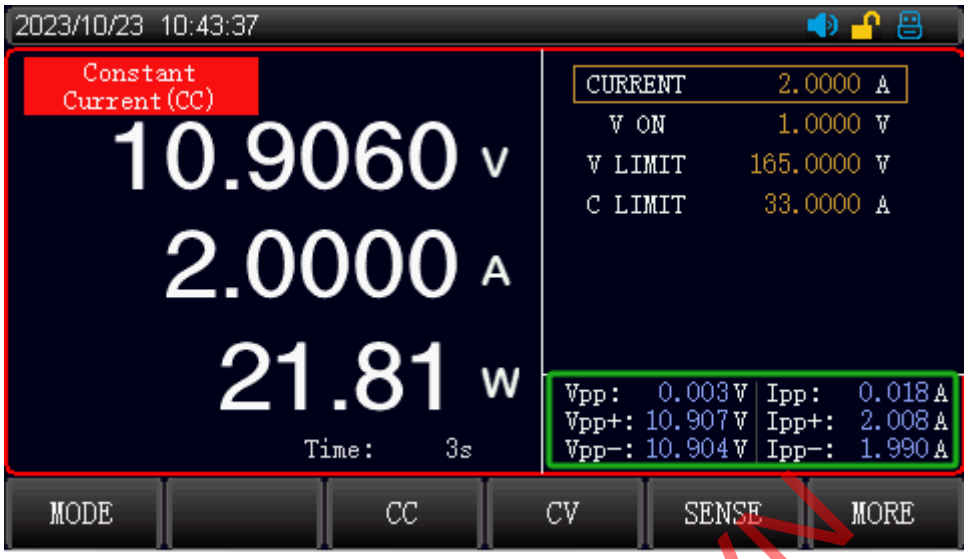
Automatic List Test

The automatic list test can be performed by setting the appropriate load voltage and combination list in the parameter setting.



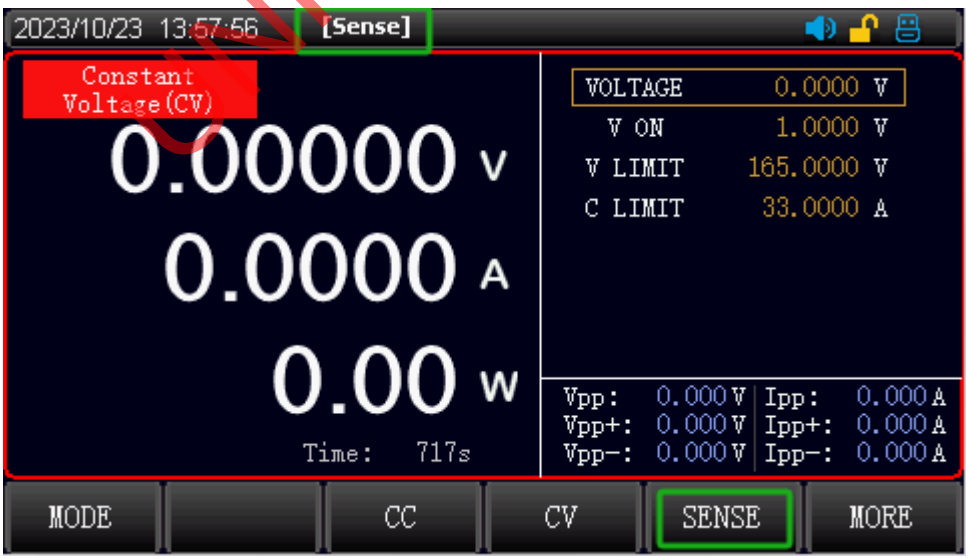
Ripple Display

The ripple wave is displayed in the right corner of the screen.



Sense Terminal

In CC/CV/CR/CP test, when the electronic load consumes a large current, it will generate a large voltage drop between the electronic load and the DUT's connecting wire. To ensure an accurate measurement, the electronic load provides a Sense terminal in the rear panel, the terminal can measure the accurate voltage of the DUT's output terminal.



4.Technical Index

Series		UTL8500+ Series			
Model		UTL8511+		UTL8512+	
Display Screen		LCD		LCD	
Rated value 0~40℃	Input voltage	0~15V	0~150V	0~15V	0~150V
	Input current	0~3A	0~30A	0~3A	0~30A
	Input power	150W		300W	
	Minimum of operating voltage	1.4V±0.1V at 30A		1.4V±0.1V at 30A	
CV (Constant Voltage) mode	Range	0.1~15V	0.1~150V	0.1~15V	0.1~150V
	Resolution	0.1mV	1mV	0.1mV	1mV
	Accuracy	± (0.03%+0.05%FS)		± (0.03%+0.05%FS)	
CV (Constant Current) mode	Range	0~3A	0~30A	0~3A	0~30A
	Resolution	0.01mA	0.1mA	0.01mA	0.1mA
	Accuracy	± (0.03+0.05%FS)		± (0.03%+0.05%FS)	
CR (Constant Resistance) mode	Range	0.05Ω~10kΩ		0.05Ω~10kΩ	
	Resolution	16bit		16bit	
	Accuracy	(0.1+0.01R)%		(0.1+0.01R)%	
CP (Constant Power) mode	Range	150W		300W	
	Resolution	10mW		10mW	
	Accuracy	± (0.1%+0.1%FS)		± (0.1%+0.1%FS)	
Dynamic mode	T1&T2	10μS~50S/Res:1μS		10μS~50S/Res:1μS	
	Accuracy	1μS/1mS±100ppm		1μS/1mS±100ppm	
	Rising/falling slope	0.0006A/μS-3A/μS		0.0006A/μS~3A/μS	
	Minimum of rising time	10μs		10μs	
Readback voltage	Range	0~15V	0~150V	0~15V	0~150V
	Resolution	0.01mV	0.1mV	0.01mV	0.1mV
	Accuracy	± (0.02%+0.03%FS)		± (0.02%+0.3%FS)	
Readback current	Range	0~3A	0~30A	0~3A	0~30A
	Resolution	0.01mA	0.1mA	0.01mA	0.1mA
	Accuracy	± (0.03%+0.05%FS)		± (0.03%+0.05%FS)	
Readback power	Range	150W		300W	
	Resolution	10mW		10mW	
	Accuracy	± (0.1%+0.1%FS)		± (0.1%+0.1%FS)	

Overpower protection		Delay protection when ≥152 W, Immediately protection when ≥165 W		Delay protection when ≥303 W, Immediately protection when ≥330 W	
Overcurrent protection		Delay protection when ≥30.3 A, Immediately protection when ≥33 A		Delay protection when ≥30.3 A, Immediately protection when ≥33 A	
Overvoltage protection		Delay protection when ≥152 V, Immediately protection when ≥165 V		Delay protection when ≥152 V, Immediately protection when ≥165 V	
Over-temperature protection		≥85℃		≥85℃	
Short Circuit	Current (CC)	≤3A	≤30A	≤3A	≤30A
	Voltage (CV)	0V	0V	0V	0V
	Resistance (CR)	60mΩ	60mΩ	50mΩ	50mΩ
Ripple display		√		√	
Waveform record		/		/	
Test mode		15 test modes: CC, CV, CR, CP, dynamic, OVP, time, OCP, CR-LED, battery, automatic list, short circuit, load effect, combination, list		15 test modes: CC, CV, CR, CP, dynamic, OVP, time, OCP, CR-LED, battery, automatic list, short circuit, load effect, combination, list	
Resistance of input terminal		300KΩ		300KΩ	
Fuse specification		0.5A(110V)/0.25A(220V)		0.5A(110V)/0.25A(220V)	
Communication interface		RS232		RS232	
Protocol		SCPI		SCPI	
Data acquisition software		√		√	
Standard accessory		Power cord		Power cord	
Power requirement		110V/220V Frequency 50/60Hz		110V/220V Frequency 50/60Hz	
Size mm (Length*Width*Height)		372*215*88		372*215*88	
Net Weight (kg)		3.73		4.49	

Series		UTL8500X+ Series							
Model		UTL8511A+		UTL8511B+		UTL8512A+		UTL8512B+	
Display Screen		LCD		LCD		LCD		LCD	
Rated value 0~40℃	Input voltage	0~15V	0~150V	0~50V	0~500V	0~15V	0~150V	0~50V	0~500V
	Input current	0~3A	0~30A	0~1.5A	0~15A	0~3A	0~30A	0~3A	0~30A
	Input power	200W		200W		400W		400W	

	Minimum of operating voltage	1.4±0.1V at 30A		2.8V±0.2V at 15A		1.4V±0.1V at 30A		2.8V±0.2V at 30A	
CV (Constant Voltage) mode	Range	0.1~15V	0.1~150V	0.1~50V	0.1~500V	0.1~15V	0.1~150V	0.1~50V	0.1~500V
	Resolution	0.1mV	1mV	0.1mV	1mV	0.1mV	1mV	0.1mV	1mV
	Accuracy	± (0.03%+0.05%FS)		± (0.03%+0.05%FS)		± (0.03%+0.05%FS)		± (0.03%+0.05%FS)	
CV (Constant Current) mode	Range	0~3A	0~30A	0~1.5A	0~15A	0~3A	0~30A	0~3A	0~30A
	Resolution	0.01mA	0.1mA	0.01mA	0.1mA	0.01mA	0.1mA	0.01mA	0.1mA
	Accuracy	± (0.03%+0.05%FS)		± (0.03%+0.05%FS)		± (0.03%+0.05%FS)		± (0.03%+0.05%FS)	
CR (Constant Resistance) mode	Range	0.05Ω~10kΩ		0.05Ω~10kΩ		0.05Ω~10kΩ		0.05Ω~10kΩ	
	Resolution	16bit		16bit		16bit		16bit	
	Accuracy	(0.1+0.01R)%		(0.1+0.01R)%		(0.1+0.01R)%		(0.1+0.01R)%	
CP (Constant Power) mode	Range	200W		200W		400W		400W	
	Resolution	10mW		10mW		10mW		10mW	
	Accuracy	± (0.1%+0.1%FS)		± (0.1%+0.1%FS)		± (0.1%+0.1%FS)		± (0.1%+0.1%FS)	
Dynamic mode	T1&T2	10μs~50s/Res:1μs		10μs~50s/Res:1μs		10μs~50s/Res:1μs		10μs~50s/Res:1μs	
	Accuracy	1μs/1ms±100ppm		1μs/1ms±100ppm		1μs/1ms±100ppm		1μs/1ms±100ppm	
	Rising/falling slope	0.0006A/μs~3A/μs		0.0006A/μs~3A/μs		0.0006A/μs~3A/μs		0.0006A/μs~3A/μs	
	Minimum of rising time	10μs		10μs		10μs		10μs	
Readback voltage	Range	0~15V	0~150V	0~50V	0~500V	0~15V	0~150V	0~50V	0~500V
	Resolution	0.01mV	0.1mV	0.01mV	0.1mV	0.01mV	0.1mV	0.01mV	0.1mV
	Accuracy	± (0.02%+0.3%FS)		± (0.02%+0.03%FS)		± (0.02%+0.3%FS)		± (0.02%+0.03%FS)	
Readback current	Range	0~3A	0~30A	0~1.5A	0~15A	0~3A	0~30A	0~3.0A	0~30A
	Resolution	0.01mA	0.1mA	0.01mA	0.1mA	0.01mA	0.1mA	0.01mA	0.1mA
	Accuracy	± (0.03%+0.05%FS)		± (0.03%+0.05%FS)		± (0.03%+0.05%FS)		± (0.03%+0.05%FS)	
Readback power	Range	200W		200W		400W		400W	
	Resolution	10mW		10mW		10mW		10mW	
	Accuracy	± (0.1%+0.1%FS)		± (0.1%+0.1%FS)		± (0.1%+0.1%FS)		± (0.1%+0.1%FS)	

Overpower protection		Delay protection when ⩾ 202W,Immediately protection when ⩾220W		Delay protection when ⩾ 202W,Immediately protection when ⩾220W		Delay protection when ⩾ 404W,Immediately protection when ⩾440 W		Delay protection when ⩾ 404W,Immediately protection when ⩾440 W	
Overcurrent protection		Delay protection when ⩾ 30.3A,Immediately protection when ⩾33A		Delay protection when ⩾ 15.2A,Immediately protection when ⩾16.5A		Delay protection when ⩾ 30.3A,Immediately protection when ⩾33A		Delay protection when ⩾ 30.3A,Immediately protection when ⩾33A	
Overvoltage protection		Delay protection when ⩾152V,Immediately protection when ⩾165V		Delay protection when ⩾505V,Immediately protection when ⩾550V		Delay protection when ⩾152V,Immediately protection when ⩾165V		Delay protection when ⩾505V,Immediately protection when ⩾550V	
Over-temperature protection		⩾85℃		⩾85℃		⩾85℃		⩾85℃	
Short Circuit	Current(CC)	⩽3A	⩽30A	⩽1.5A	⩽15A	⩽3A	⩽30A	⩽3A	⩽30A
	Voltage(CV)	0V	0V	0V	0V	0V	0V	0V	0V
	Resistance (CR)	60mΩ	60mΩ	200mΩ	200mΩ	50mΩ	50mΩ	120mΩ	120mΩ
Ripple display		√		√		√		√	
Waveform record		√		√		√		√	
Test mode		15 test modes: CC, CV, CR, CP, dynamic, OVP, time, OCP, CR-LED, battery, automatic list, short circuit, load effect, combination, list		15 test modes: CC, CV, CR, CP, dynamic, OVP, time, OCP, CR-LED, battery, automatic list, short circuit, load effect, combination, list		15 test modes: CC, CV, CR, CP, dynamic, OVP, time, OCP, CR-LED, battery, automatic list, short circuit, load effect, combination, list		15 test modes: CC, CV, CR, CP, dynamic, OVP, time, OCP, CR-LED, battery, automatic list, short circuit, load effect, combination, list	
Resistance of input terminal		300KΩ		1MΩ		300KΩ		1MΩ	
Fuse specification		0.5A(110V)/ 0.25A(220V)		0.5A(110V)/ 0.25A(220V)		0.5A(110V)/ 0.25A(220V)		0.5A(110V)/ 0.25A(220V)	
Communication interface		RS232		RS232		RS232		RS232	

Protocol	SCPI	SCPI	SCPI	SCPI
Data acquisition software	√	√	√	√
Standard accessory	Power cord	Power cord	Power cord	Power cord
Power requirement	110V/220V Frequency 50/60Hz	110V/220V Frequency 50/60Hz	110V/220V Frequency 50/60Hz	110V/220V Frequency 50/60Hz
Size mm (Length*Width*Height)	372*215*88	372*215*88	372*215*88	372*215*88
Net Weight (kg)	3.73	3.73	4.49	4.49

Series		UTL8500X+ Series			
Model		UTL8513A+		UTL8513B+	
Display Screen		LCD		LCD	
Rated value 0~40℃	Input voltage	0~15V	0~150V	0~50V	0~500V
	Input current	0~12A	0~120A	0~6A	0~60A
	Input power	600W		600W	
	Minimum of operating voltage	1.4V±0.1V at 120A		2.8V±0.2V at 60A	
CV (Constant Voltage) mode	Range	0.1~15V	0.1~150V	0.1~50V	0.1~500V
	Resolution	1mV	10mV	1mV	10mV
	Accuracy	± (0.03%+0.05%FS)		± (0.03%+0.05%FS)	
CV (Constant Current) mode	Range	0~12A	0~120A	0~6A	0~60A
	Resolution	0.1mA	1mA	0.1mA	1mA
	Accuracy	± (0.03%+0.05%FS)		± (0.03%+0.05%FS)	
CR (Constant Resistance) mode	Range	0.05Ω~10kΩ		0.05Ω~10kΩ	
	Resolution	16bit		16bit	
	Accuracy	(0.1+0.01R)%		(0.1+0.01R)%	
CP (Constant Power) mode	Range	600W		600W	
	Resolution	10mW		10mW	
	Accuracy	± (0.1%+0.1%FS)		± (0.1%+0.1%FS)	
Dynamic mode	T1&T2	10μs~50s/Res:1μs		10μs~50s/Res:1μs	
	Accuracy	1μs/1ms±100ppm		1μs/1ms±100ppm	
	Rising/falling slope	0.0024A/μs~12A/μs		0.0012A/μs~6A/μs	
	Minimum of rising time	10μs		10μs	
Readback voltage	Range	0~15V	0~150V	0~50V	0~500V
	Resolution	0.1mV	1mV	0.1mV	1mV

	Accuracy	± (0.02%+0.03%FS)		± (0.02%+0.03%FS)	
Readback current	Range	0~12A	0~120A	0~6A	0~60A
	Resolution	0.1mA	1mA	0.1mA	1mA
	Accuracy	± (0.03%+0.05%FS)		± (0.03%+0.05%FS)	
Readback power	Range	600W		600W	
	Resolution	10mW		10mW	
	Accuracy	± (0.1%+0.1%FS)		± (0.1%+0.1%FS)	
Overpower protection		Delay protection when ≥606W,Immediately protection when ≥ 660W		Delay protection when ≥606W,Immediately protection when ≥ 660W	
Overcurrent protection		Delay protection when ≥121.2A,Immediately protection when ≥132A		Delay protection when ≥60.6A,Immediately protection when ≥66 A	
Overvoltage protection		Delay protection when ≥ 152 V, Immediately protection when ≥165 V		Delay protection when ≥505V,Immediately protection when ≥550V	
Over-temperature protection		≥85℃		≥85℃	
Short Circuit	Current (CC)	≤12A	≤120A	≤6A	≤60A
	Voltage (CV)	0V	0V	0V	0V
	Resistance (CR)	35mΩ	35mΩ	105mΩ	105mΩ
Ripple display		√		√	
Waveform record		√		√	
Test mode		15 test modes: CC, CV, CR, CP, dynamic, OVP, time, OCP, CR-LED, battery, automatic list, short circuit, load effect, combination, list		15 test modes: CC, CV, CR, CP, dynamic, OVP, time, OCP, CR-LED, battery, automatic list, short circuit, load effect, combination, list	
Resistance of input terminal		1MΩ		1MΩ	
Fuse specification		0.5A(110V)/0.25A(220V)		0.5A(110V)/0.25A(220V)	
Communication interface		RS232		RS232	
Protocol		SCPI		SCPI	
Data acquisition software		√		√	
Standard accessory		Power cord		Power cord	
Power requirement		110V/220V Frequency 50/60Hz		110V/220V Frequency 50/60Hz	
Size mm (Length*Width*Height)		475*215*88		475*215*88	
Net Weight (kg)		6.72		6.72	

5.Accessory

Article	Quantity	Remarks
DC electronic load	1 pcs	The model is subject to the actual order
Power cord	1 pcs	
RS232 communication wire	1 pcs	
Spare fuse	2 pcs	T0.25A 250 V
User's manual	/	Electronic file can download from the official website
Certificate Of Calibration	1 pcs	
Multi-language Safety Precautions	1 pcs	

6.Contact Us

Warranty Service

If the LCR is under warranty or is covered by a maintenance contract, it will be repaired under the terms of warranty as below. If the LCR is no longer under warranty, UNI-T will notify you of the cost of repair after examining the LCR.
UNI-T UTR2830 series LCR provide 3- year warranty for mainframes and 1-year warranty for accessories as standard.
The above warranty applies to all UNI-TREND test measurement instrument products procured through the UNI-TREND authorized distributors. Product purchased from outside the UNI-TREND instruments network will be serviced by the selling agents and not UNI-TREND TECHNOLOGY. Please Go to UNI-T official website ->instruments->support->Where to buy to find the authorized test and measurement instrument distributors.

Learn more at: www.uni-trend.com

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