UNI-T®

Instruments.uni-trend.com

User's Manual

UDP6720 Series Programmable DC Power Supply

V1.2

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Foreword

Thank you for choosing this UNI-T instrument. For safe and proper use this instrument, please read this manual carefully, especially the safety instructions section.

After reading this manual, it is recommended to keep the manual in a convenient location, preferably near the device, for future reference.

1 Introduction

This manual includes safety requirements, installment and the operation of UDP6720 series DC Power Supply.

2 Safety Requirements

This chapter contains information and warnings that must be observed. Ensure that the instrument is operated under the safe conditions. In addition to the safety precautions indicated in this chapter, you must also follow accepted safety procedures.

Safety Precautions	
Warning	Please follow these guidelines to avoid possible electric shock and risk to personal safety.
	Users must adhere to standard safety precautions during the operation, servicing, and maintenance of this device. UNI-T will not be liable for any personal safety and property loss caused by the user's failure following the safety precautions. This device is designed for professional users and responsible organizations for measurement purposes. Do not use this device in any manner not specified by the manufacturer. This device is intended for indoor use only, unless otherwise stated in the product manual.
Safety Statements	
Warning	"Warning" indicates the presence of a hazard. It warns users to pay attention to a certain operation process, operation method or similar. Personal injury or death may occur if the rules in the "Warning" statement are not properly executed or observed. Do not proceed to the next step until you fully understand and meet the conditions stated in the "Warning" statement.
Caution	"Caution" indicates the presence of a hazard. It warns users to pay attention to a certain operation process, operation method or similar. Product damage or loss of important data may occur if the rules in the "Caution" statement are not properly executed or observed. Do not proceed to the next step until you fully understand and meet the conditions stated in the "Caution" statement.
Note	"Note" indicates important information. It reminds users to pay attention to procedures, methods, and conditions, etc. The contents of "Note" should be highlighted if necessary.
Safety Signs	

	Danger	It indicates danger of electric shock, which may cause personal injury or death.
	Warning	It indicates that there are factors you should be cautious of to prevent personal injury or product damage.
	Caution	It indicates danger, which may cause damage to this device or other equipment if you fail to follow a certain procedure or condition. If the "Caution" sign is present, all conditions must be met before you proceed to operation.
	Note	It indicates potential problems, which may cause failure of this device if you fail to follow a certain procedure or condition. If the "Note" sign is present, all conditions must be met before this device will function properly.
	AC	Alternating current of device. Please check the region's voltage range.
	DC	Direct current device. Please check the region's voltage range.
	Grounding	Frame and chassis grounding terminal
	Grounding	Protective grounding terminal
	Grounding	Measurement grounding terminal
	OFF	Main power off
	ON	Main power on
	Power	Standby power supply: When the power switch is turned off, this device is not completely disconnected from the AC power supply.
CAT I	Secondary electrical circuit connected to wall sockets through transformers or similar equipment, such as electronic instruments and electronic equipment; electronic equipment with protective measures, and any high-voltage and low-voltage circuits, such as the copier in the office.	
CAT II	Primary electrical circuit of the electrical equipment connected to the indoor socket via the power cord, such as mobile tools, home appliances, etc. Household appliances, portable tools (e.g., electric drill), household sockets, sockets more than 10 meters away from CAT III circuit or sockets more than 20 meters away from CAT IV circuit.	
CAT III	Primary circuit of large equipment directly connected to the distribution board and circuit between the distribution board and the socket (three-phase distributor circuit includes a single commercial lighting circuit). Fixed equipment, such as multi-phase motor and multi-phase fuse box; lighting equipment and lines inside large buildings; machine tools and power distribution boards at industrial sites (workshops).	
CAT IV	Three-phase public power unit and outdoor power supply line equipment. Equipment designed to "initial connection," such as power distribution system of power station, power instrument, front-end overload protection, and any outdoor transmission line.	

CE	Certification	CE indicates a registered trademark of EU.
UKCA	Certification	UKCA indicates a registered trademark of United Kingdom.
ETL Intertek 4007682	Certification	Conforms to UL STD 61010-1 and 61010-2-030. Certified to CSA STD C22.2 No.61010-1 and 61010-2-030.
	Waste	Do not place equipment and accessories in the trash. Items must be properly disposed of in accordance with local regulations.
40	EEUP	This environment-friendly use period (EFUP) mark indicates that dangerous or toxic substances will not leak or cause damage within this indicated time period. The environmentally friendly use period of this product is 40 years, during which it can be used safely. Upon expiration of this period, it should enter the recycling system.
Safety Requirements		
Warning		
Preparation before use	Please connect this device to AC power supply with the power cable provided. The AC input voltage of the line reaches the rated value of this device. See the product manual for specific rated value. The line voltage switch of this device matches the line voltage. The line voltage of the line fuse of this device is correct. This device is not intended for measuring the main circuit.	
Check all terminal rated values	Please check all rated values and marking instructions on the product to avoid fire and the impact of excessive current. Please consult the product manual for detailed rated values before connection.	
Use the power cord properly	You can only use the special power cord for the instrument approved by the local and state standards. Please check whether the insulation layer of the cord is damaged, or the cord is exposed, and test whether the cord is conductive. If the cord is damaged, please replace it before using the instrument.	
Instrument Grounding	To avoid electric shock, the grounding conductor must be connected to the ground. This product is grounded through the grounding conductor of the power supply. Please be sure to ground this product before it is powered on.	
AC power supply	Please use the AC power supply specified for this device. Please use the power cord approved by your country and confirm that the insulation layer is not damaged.	
Electrostatic prevention	This device may be damaged by static electricity, so it should be tested in the anti-static area if possible. Before the power cable is connected to this device, the internal and external conductors should be grounded briefly to release static electricity. The protection grade of this device is 4 kV for contact discharge and 8 kV for air discharge.	
Measurement accessories	Measurement accessories designated as lower-grade, which are not applicable to main power supply measurement, CAT II, CAT III, or CAT IV circuit measurement. Probe subassemblies and accessories within the range of IEC 61010-031 and current sensors within the range of IEC 61010-2-032 can meet its requirements.	
Use the input / output port of this device properly	Please use the input / output ports provided by this device in a proper manner. Do not load any input signal at the output port of this device. Do not load any signal that does not reach the rated value at the input	

	port of this device. The probe or other connection accessories should be effectively grounded to avoid product damage or abnormal function. Please refer to the product manual for the rated value of the input / output port of this device.
Power fuse	Please use a power fuse of exact specification. If the fuse needs to be replaced, it must be replaced with another one that meets the specified specifications by the maintenance personnel authorized by UNI-T.
Disassembly and cleaning	There are no components available for operators inside. Do not remove the protective cover. Qualified personnel must conduct maintenance.
Service environment	This device should be used indoors in a clean and dry environment with ambient temperature from 0 ℃ to +40 ℃. Do not use this device in explosive, dusty, or high humidity conditions.
Do not operate in humid environment	Do not use this device in a humid environment to avoid the risk of internal short circuit or electric shock.
Do not operate in flammable and explosive environment	Do not use this device in a flammable and explosive environment to avoid product damage or personal injury.
Caution	
Abnormality	If this device may be faulty, please contact the authorized maintenance personnel of UNI-T for testing. Any maintenance, adjustment or parts replacement must be done by the relevant personnel of UNI-T.
Cooling	Do not block the ventilation holes at the side and back of this device. Do not allow any external objects to enter this device via ventilation holes. Please ensure adequate ventilation and leave a gap of at least 15 cm on both sides, front and back of this device.
Safe transportation	Please transport this device safely to prevent it from sliding, which may damage the buttons, knobs, or interfaces on the instrument panel.
Proper ventilation	Insufficient ventilation will cause the device temperature to rise, thus causing damage to this device. Please keep proper ventilation during use, and regularly check the vents and fans.
Keep clean and dry	Please take actions to avoid dust or moisture in the air affecting the performance of this device. Please keep the product surface clean and dry.
Note	
Calibration	The recommended calibration period is one year. Calibration should only be conducted by qualified personnel.

3 Product Overview

UDP6720 Series programmable DC power supply is switching power supply with wide span. The model is small, light and powerful. It adopts LCD, so the parameter can be display directly and easy to use; the product can be applied to the field of automatic test system, R&D, laboratory, teaching experiment, phone and home appliances maintenance.

3.1 Specifications and Functions

Model	Output Range	Input Range	Specification of Fuse
UDP6722	0V-80V, 0A-20A, 0W-400W	200-240V AC	250V/T5A
UDP6723	0V-80V, 0A-40A, 0W-850W		250V/T15A
UPD6724	0V-80V, 0A-40A, 0W-1500W		
UDP6723B	0V-150V, 0A-20A, 0W-850W		
UPD6724B	0V-150V, 0A-20A, 0W-1500W		

3.2 Accuracy of Instrument

Model	UDP6722
Rated output voltage	0~80V
Rated output current	0~20A
Output power	400W
Load regulation	Voltage: <0.01%+10mV
	Current: <0.1%+5mA
Power regulation	Voltage: <0.01%+2.5mV
	Current:<0.1%+2.5mA
Setting Resolution	Voltage: 10mV
	Current: 10mA
Setting Accuracy (25℃±5℃)	Voltage: <0.01%+20mV
	Current:<0.1%+10mA
Readback resolution	Voltage: 10mV
	Current: 10mA
Readback accuracy (25℃±5℃)	Voltage: <0.01%+20mV
	Current:<0.1%+20mA
Ripple and noise (20Hz~20MHz)	Voltage: <50mVpp
	Current: <15mArms
Temperature coefficient	0.02%/℃+10mV
	0.03%/℃+10mA
Storage	100
List function	40*200

Display mode	4.3"TFT LCD
Interface	RS232/RS485/USB Host/USB Device/LAN
USB	√
Communication protocol	SCPI/MODBUS
Power voltage	AC 220V±10%
Frequency	50Hz/60Hz
Size (W×H×D)	214X88X393mm
Weight	4.65 kg

Model	UDP6723	UDP6724
Rated output voltage	0~80V	
Rated output current	0~40A	
Output power	850W	1500W
Load regulation ±(%of Output+Offset)	Voltage: <0.01%+10mV	
	Current: <0.1%+10mA	
Power regulation ±(%of Output+Offset)	Voltage: <0.01%+10mV	
	Current: <0.1%+10mA	
Setting Resolution	Voltage: 10mV	
	Current: 10mA	
Setting Accuracy (25℃±5℃)±(%of Output+Offset)	Voltage: <0.03%+20mV	
	Current: <0.1%+40mA	
Readback resolution	Voltage: 10mV	
	Current: 10mA	
Readback accuracy (25℃±5℃) ±(%of Output+Offset)	Voltage: <0.03%+20mV	
	Current: <0.1%+40mA	
Ripple and noise (20Hz~20MHz)	Voltage: <100mVpp	
	Current: <50mArms	
Temperature coefficient (%Output/°C+Offset)	Voltage: 0.02%/℃+10mV	
	Current: 0.03%/℃+20mA	
Rise time (light load)	<0.3S	
Rise time (full load)	<0.5S	
Fall time (light load)	<5S	
Fall time (full load)	<0.15S	
Transient Response	<500uS	
Readback Temp.coefficient (%Output/°C+Offset)	Voltage: 0.01%+10mV	
	Current: 0.03%+20mA	
Setting stability-30min	Voltage: 0.03%+20mV	
	Current: 0.1%+40mA	
Setting stability-8h	Voltage: 0.03%+20mV	
	Current: 0.1%+40mA	

Readback stability-30min	Voltage: 0.03%+20mV	
	Current: 0.1%+40mA	
Readback stability-8h	Voltage: 0.03%+20mV	
	Current: 0.1%+40mA	
Protection	OVP/OCP/OTP	
Storage	100	
List Function	40*200	
Screen	4.3"TFT LCD	
Interface	RS232/RS485/USB Host/USB Device/LAN	
USB	√	
Protocol	SCPI/MODBUS	
Power Voltage	220V ±10%	220V ±10%
Frequency	47~63Hz	
Size(W×H×D)	475*215*88mm	
Weight	5.9kg	
Efficiency	84%	88%
Fuse	15A	
PF	0.98	
Max Input Current	10A	
Maximum Apparent Power	1100VA	2000VA
Withstand Voltage	500V	

	UDP6723B	UDP6724B
Rated output voltage	0~150V	
Rated output current	0~20A	
Output power	850W	1500W
Load regulation ±(%of Output+Offset)	Voltage: <0.01%+40mV	
	Current： <0.1%+10mA	
Power regulation ±(%of Output+Offset)	Voltage: <0.01%+30mV	
	Current: <0.1%+10mA	
Setting Resolution	Voltage: 100mV	
	Current: 10mA	
Setting Accuracy(25℃±5℃) ±(%of Output+Offset)	Voltage: <0.03%+100mV	
	Current: <0.1%+20mA	
Readback resolution	Voltage: 100mV	
	Current: 10mA	
Readback accuracy(25℃±5℃) ±(%of Output+Offset)	Voltage: <0.03%+200mV	
	Current: <0.1%+20mA	
Ripple and noise (20Hz~20MHz)	Voltage: <150mVpp	
	Current: <30mArms	
	Voltage: 0.02%/℃+100mV	

Temperature coefficient (%Output/°C+Offset)	Current: 0.03%/℃+20mA	
Rise time (light load)	<0.3S	
Rise time (full load)	<1S	
Fall time (light load)	<5S	
Fall time (full load)	<0.2S	
Transient Response	<500uS	
Readback Temp.coefficient (%Output/°C+Offset)	Voltage: 0.02%+100mV	
	Current: 0.03%+20mA	
Setting stability-30min	Voltage: 0.03%+75mV	
	Current: 0.1%+40mA	
Setting stability-8h	Voltage: 0.03%+75mV	
	Current: 0.1%+20mA	
Readback stability-30min	Voltage: 0.03%+75mV	
	Current: 0.1%+20mA	
Readback stability-8h	Voltage: 0.03%+75mV	
	Current: 0.1%+20mA	
Protection	OVP、OCP、OTP	
Storage	100	
List Function	40*200	
Screen	4.3"TFT LCD	
Interface	RS232/RS485/USBHost/USBDevice/LAN	
U disk	Support	
Protocol	SCPI/MODBUS	
Power Voltage	220 ±10%	
Frequency	47~63Hz	
Size(W×H×D)	75*215*88	
Weight	6.1kg	
Efficiency	84%	88%
Fuse	15A	
PF	0.98	
Max Input Current	10A	
Maximum Apparent Power	1100VA	2000VA
Withstand Voltage	500V	

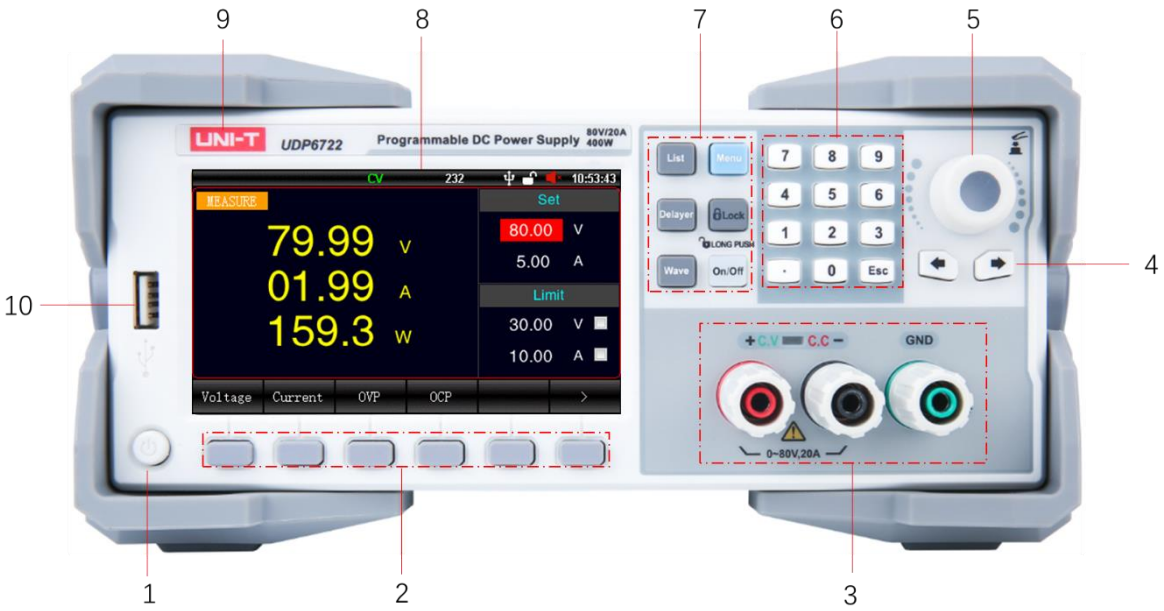
3.3 Main Characteristics

- 4.3 inch TFT-LCD
- Full range high resolution
- Low ripple and noise
- Remote sensing function
- OVP/OCP/OTP protection
- List mode, delayer function
- Multiple interfaces: RS232, RS485, LAN, USBHost and USBDevice
- Supports SCPI/MODBUS protocol
- 100 sets internal files
- USB program update and import/export file
- Intelligent regulation fans

4. Product Introduction

4.1 Front Panel

UDP6722:



UDP6723&24&23B&24B:

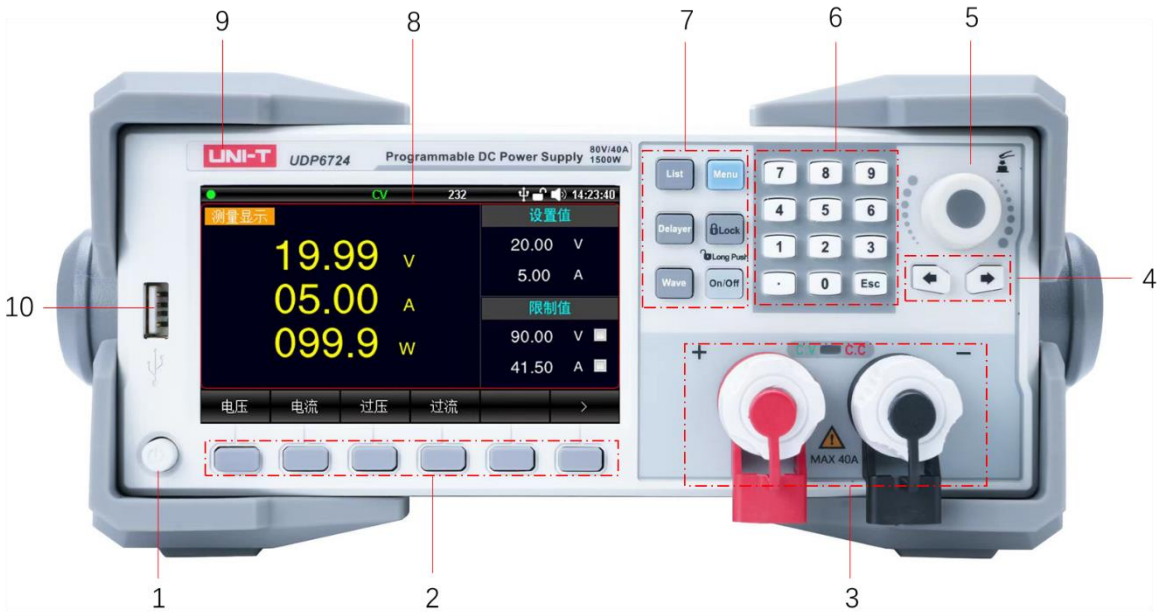
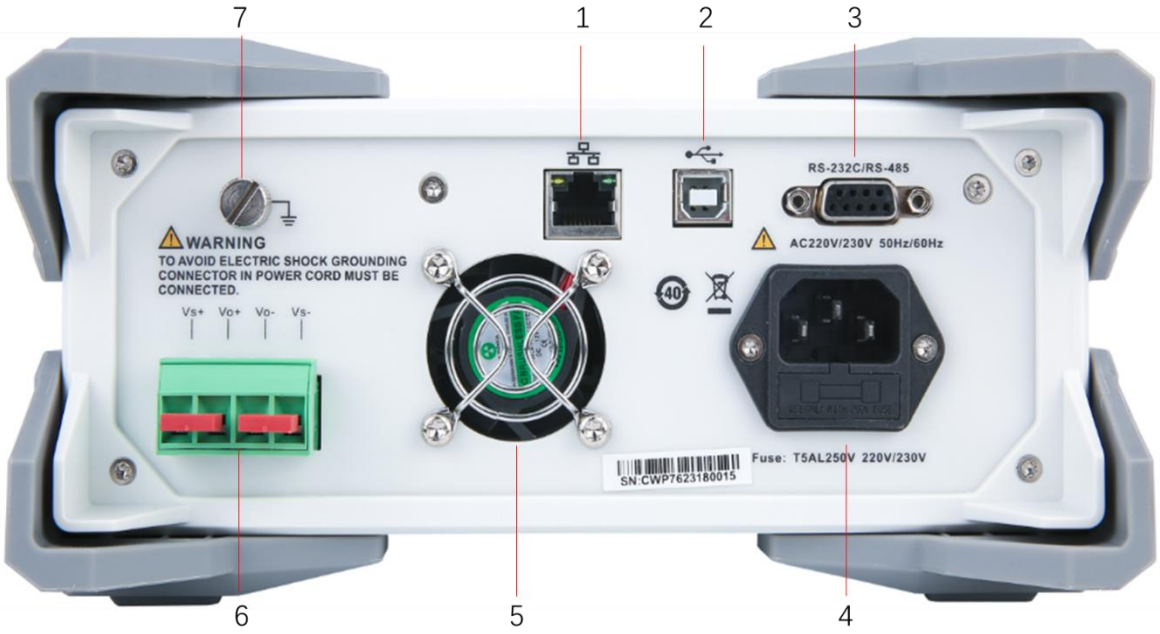


Figure 4-1 Front Panel

No.	Item	Description
1	Power switch	Turn on/off the power
2	Functional keys	Function will be change according to the display menu on the screen
3	Output port	Power output port on front panel
4	Arrow keys	To move the cursor
5	Rotary knob	To move the cursor and confirm the function
6	Numerical keyboard	To input numerical parameter; Esc key
7	Functional shortcut key	Specific functional shortcut key List Menu Delayer Lock key Wave On/Off (output switch)
8	LCD	4.3 inch TFT-LCD
9	Label	Company's logo and model information
10	USB interface	External USB interface

4.2 Rear Panel

UDP6722:



UDP6723&24&23B&24B:

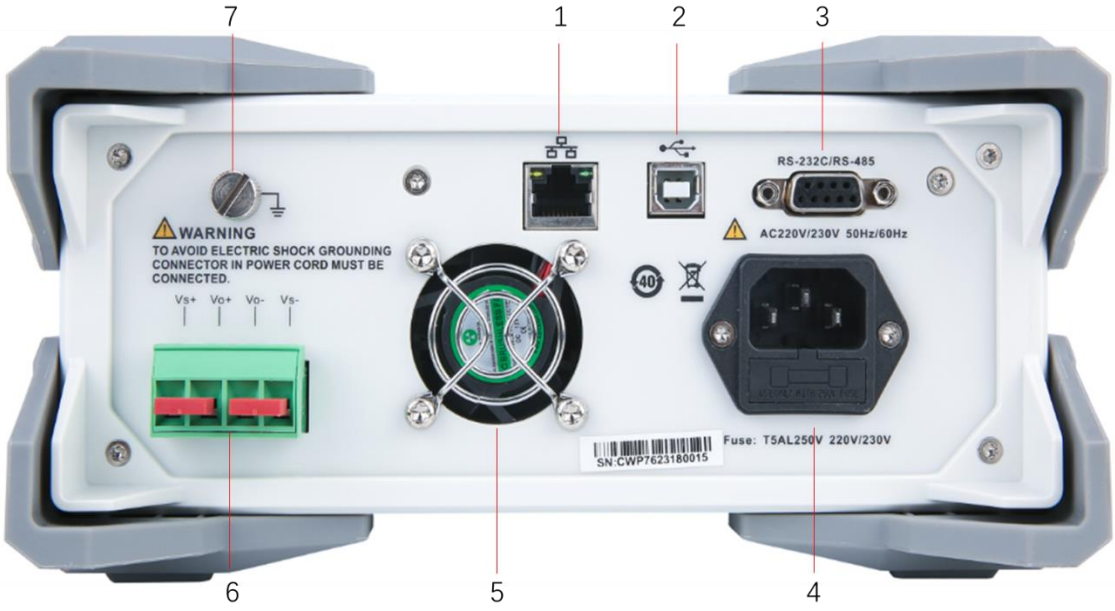


Figure 4-2 Rear Panel

No.	Item	Description
1	LAN interface	
2	USB Type-B interface	
3	DB9 female head port	RS232C and RS485 common communication interface
4	Power input port and fuse	Power socket Fuse specifications: T5AL250V UDP6722 T15AL250V UDP6723&24&23B&24B
5	Cooling fans	Please leave space for cooling
6	Power output port on rear panel	It has compensation function. If only to use the port on front panel, it should use the input terminal attached with the instrument.
7	Protective grounding terminal	

5. Inspection and Installation

5.1 Packing List

Before using the instrument,

1. Check the appearance whether is damaged or scratched;
2. Check the packing list if has loss.

   If the product is damaged or accessory is missing, please contact UNI-T sales department or distributor.

5.2 Power Requirements

UDP6720 Series DC power supply can only be used under the following power conditions.

Voltage: AC 220V±10%

Frequency: 50/60Hz

 Warning: To prevent electric shock, please make sure that the power line is securely connect to the ground.

5.3 Operation Environment

UDP6720 Series DC power supply is recommended for use under the following environmental conditions.

Item	Environmental Requirements
Operating temperature	0-40℃
Operating humidity	20%-80% (non-condensing)
Storage temperature	-20-60℃
Altitude	≤2000 meters
Pollution degree	2 level

5.4 Cleaning

To prevent electric shock, unplug the power line before cleaning.
Use clean cloth with slight water to wipe outer shell and panel and keep it dry. Avoid water enters the instrument.
Do not clean the internal of the instrument.
⚠ Note: Do not use solvent (alcohol or gasoline) to clean instrument.

5.5 Handle

Handle is adjustable and can adjust to four positions, hold two sides of the handle to pull or rotate as shown in the following figure.

Figure 5-1 Original Position

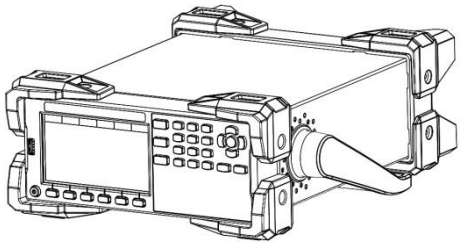


Figure 5-2 Test Position

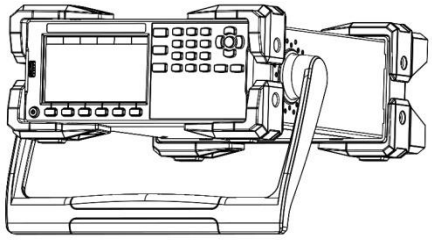


Figure 5-3 Remove Handle

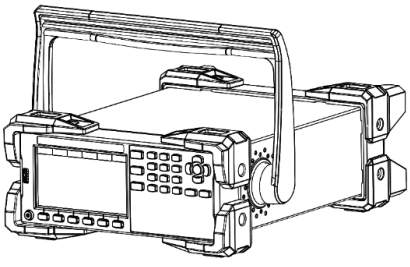
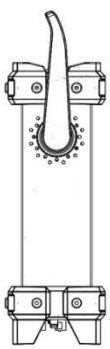


Figure 5-4 Lift Position



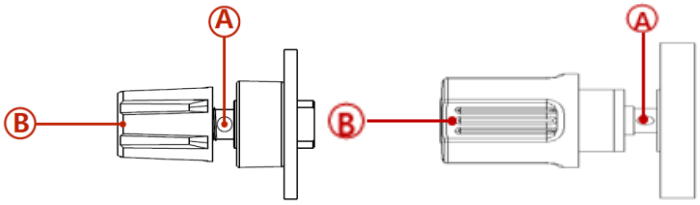
5.6 Daily Checking

To avoid the accident, please check the instrument before using.

1. The instrument's input power should conform to the specification and the power configuration should be correct.
2. The instrument should be securely connected to the ground.
3. DUT is sound, no crack, break and damage.

5.7 Wiring Terminal

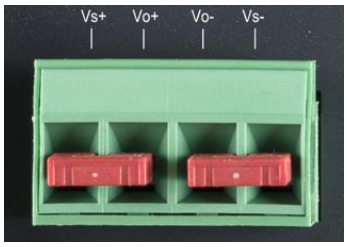
Position A at wiring terminal can output the rated current of the instrument. Position B at wiring terminal supports standard banana plug, but can only output the maximum of 10A current. (Left: UDP6722, Right: UDP6723&24&23B&24B)



5.8 Remote Sensing

When the power output current is too large or the connecting line is too long, a large voltage drop will be generated on the connection line, resulting in a decrease in the voltage obtained by the load. This series provides a remote compensation terminal on the rear panel, which can compensate for the line loss of the connecting line, so that the voltage at the load end is equal to the voltage set by the power supply.

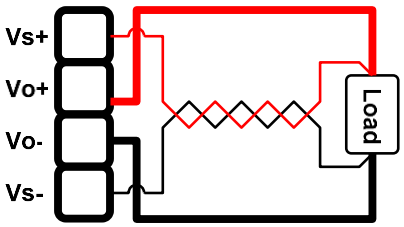
Figure 5-5 Remote Compensation on Rear Panel



5.8.1 Wiring of Remote Sensing

1. Turn off the output of power.
2. Remove the shortcircuit plate between Vs+ and Vo+ and Vs- and Vo-.
3. Use the output terminal on the front panel or Vo+ and Vo- on the rear panel to connect to the load.
4. Use Vs+ on the rear panel to connect the positive end of the load, Vs- connect to the negative end of the load.

Figure 5-6 Wiring of Remote Sensing



Notes

1. It would be better to strand Vs+ and Vs- together to enhance the anti-interference capability.
2. If not use remote sensing, please separately short connect Vs+ and Vo+, Vs- and Vo-.

6. <Test>

This chapter contains

- Test display
- Status bar
- Test result

6.1 Measure

The instrument will enter <Measure> page when boot up. The page is used to set and display the basic parameter of power. Press ESC key multiple times in arbitrary interface can back to <Measure> page

Figure 6-1 <Measure> Page

<Measure> Page

No.	Item	Description
1	Functional key	Option of shortcut key displayed in the screen
2	Data display	Display the real-time voltage, current and power
3	Status bar	Display the current operating status and a part of setup
4	Output setup	Parameter setup of voltage and current
5	Protection setup	Parameter setup of OVP/OCP, press OVP/OCP shortcut key two times to turn it on or turn off.

6.2 Status Bar

Figure 6-1 Icon on Status Bar (Measure Page)

Figure 6-3 Icon on Status Bar (Other Page)

Icon on Status Bar

No.	Picture	Description
1	/	Power output has turned off
		Blinking: the power is outputing
2	OFF	Power output has turned off
	CV	Power output is operating CV mode
	CC	Power output is operating CC mode
3	/	Normal mode
	LIST	List mode has turned on
	DELA	Delayer has turned on
4	232	232 bus has enabled
	485	485 bus has enabled
	LAN	LAN bus has enabled
	USB	USB bus has enabled
5		Internet line has insert and recognized
6		USB has insert and recognized
7		Key has not lock, all keys can be use
		Key has locked, only output and unlock key can be use
8		Sound key has turned on
		Sound key has turned off
9		Time display
10		Voltage and current value, measure page is not displayed

6.3 Screenshot

The instrument has screenshot function. Insert USB to the port on the front panel and long press rotary knob can capture the current screen image, it can save to USB for later use.

⚠ It is recommended to use branded USB.
USB format is FAT32, the maximum capacity is 128G.

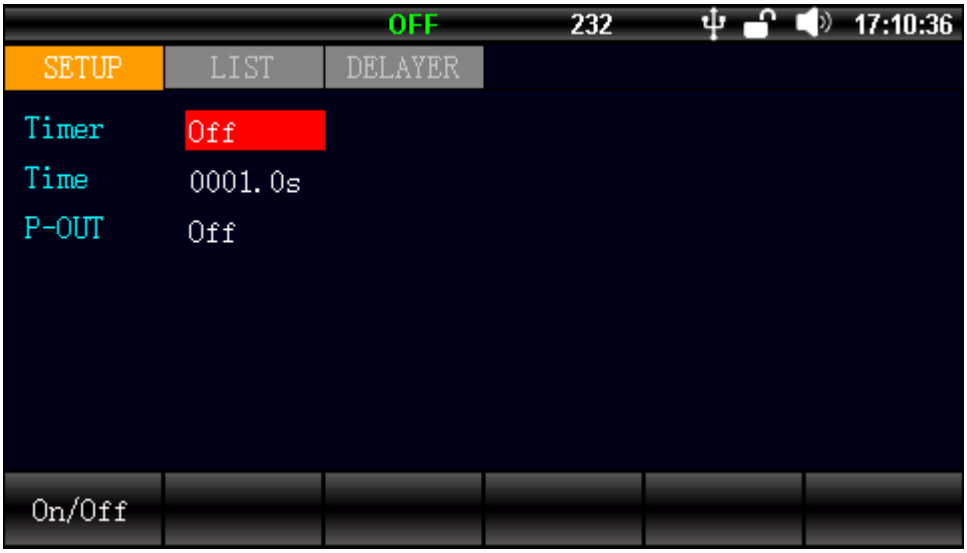
6.4 Lock Key

To prevent changing the test conditions by accident, the instrument has lock key function. Short press [Lock] key to turn on the function; long press [Lock] key for 1s to turn off the function. When lock key is activated, only output and unlock key can be use

7 . Setup

Press [Delayer] two times to enter setup page. The page can set other setup for power output.

Figure 7-1 <Setup> Page



< Setup> Page

Item	Setting	Description
Timer	Off, On	The instrument will stop output when it reach to the set output time. The default setting is Off.
Time	0.1-9999.9s	Time for timing output, the default time is 0.1s.
P-out	Off, On	Whether to output the set parameter after the instrument boots up. The default setting is Off.

8. List Setup

List mode is used to set the voltage and current value and output time for every steps. To complete the various kinds of output changing through the combination of multiple steps. The list mode supports the maximum setting of 200 steps, and the instrument supports the storage of 40 list files. User can save the file into USB or recall the file from USB after USB inserts in the instrument.
Press [List] key can step through <Measure>, <List>, and stay at <List> page. Or press the functional key below the <Measure > page and press [List] key to enter list setup page.

Figure 8-1 <List Setup> Basic Parameter Setup

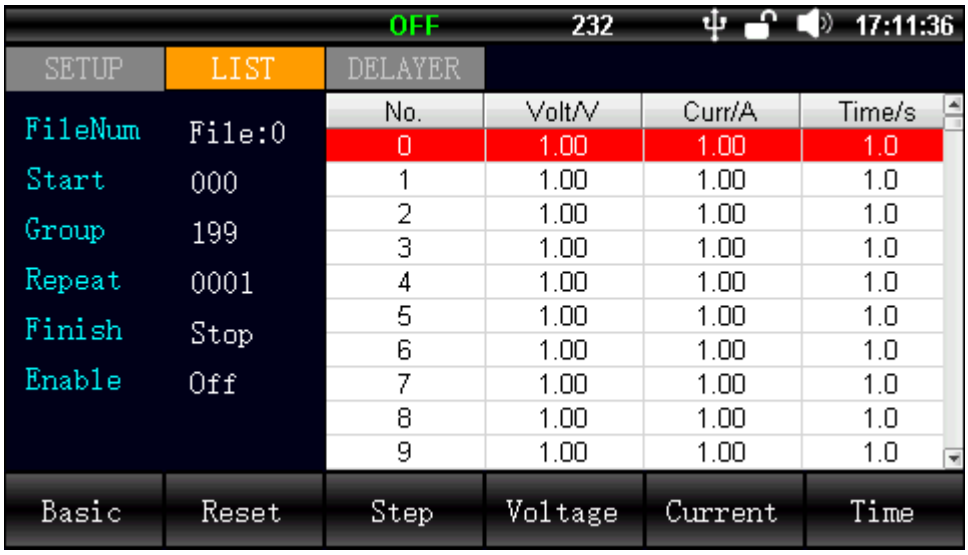
<List Setup>

Item	Setting	Description
FileNum	/	The currently loading list file, press [Save] shortcut key to enter <ListFile> to save and recall the file.
Start	0-199	Select the line to start the test from the list on the right side, the default is 0.
Group	1-199	Count the output step starts from the initial group number, the default is 1.
Repeat	1-9999	Times of test cycly, the default is 1.
Finish	Stop, Hold	Stop: stop the output when the test is finished. Hold: output the last test item when the test is finished.

Enable	Off, On	Whether to enable the list test, if the list test is enabled, **LIST** displays in title bar. After the list test is enabled, press **[On/Off]** key to start the list test and the indicator will blinking to distinguish from the normal output. Enable the list test will turn off the delayer function.
Sheet	/	Enter sheet set up
Local File	/	Enter List File (Local)
Udisk .LIST	/	Enter Udisk .LIST file
Udisk .CSV	/	Enter Udisk .CSV file

Press [Sheet] key to enter Sheet setup.

Figure 8-2 Parameter Setup of List Output



Shortcut key of list output

Shortcur Key	Setting	Description
Basic	/	Swithc to the basic parameter setup on the left side after press this key.
Reset	/	Set voltage to 1.00V, current to 1.00A, time to 1.0s after press this key.
Step	0-199	000 1.00 1.00 1.0 Press Step key and then rotate rotary knob or use keyboard to input the line number.
Voltage	0-85.00V	0 1.00 1.00 1.0 Press Voltage key and then rotate rotary knob or use

		keyboard to input the output voltage of this step.
Current	0-20.5A	 Press Current key and then rotate rotary knob or use keyboard to input the output current of this step.
Time	0.1-9999.9s	 Press Time key and rotate rotary knob or use keyboard to set the output time of this step.

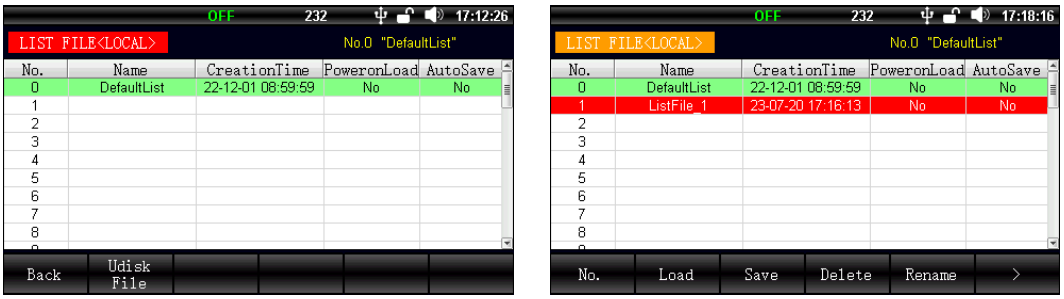
9. List File

List file includes the local file and USB file;

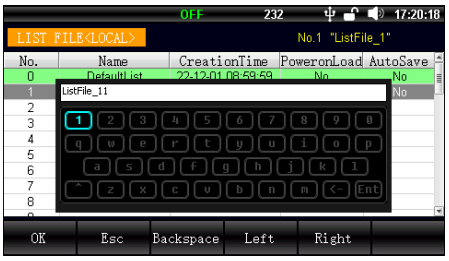
Press the functional key below the <Measure > interface and press [File] key to enter file management page.

9.1 List File (Local)

Figure 9-1 ListFile (Local)



Shortcur Key	Setting	Description
Back		Back to set up
Udisk File		Eenter Udisk
Local File		Eenter local disk
No.	0-39	The number of saved file, file number starts from 0 and cannot be deleted.
Load	/	Loading the file in this line, the current list setup will lost.
Save	/	Save the list setup into this line file. Blank line: create a new list file Existing file: overlay the current file and the name will not change.
Delete	/	Delete the current file.

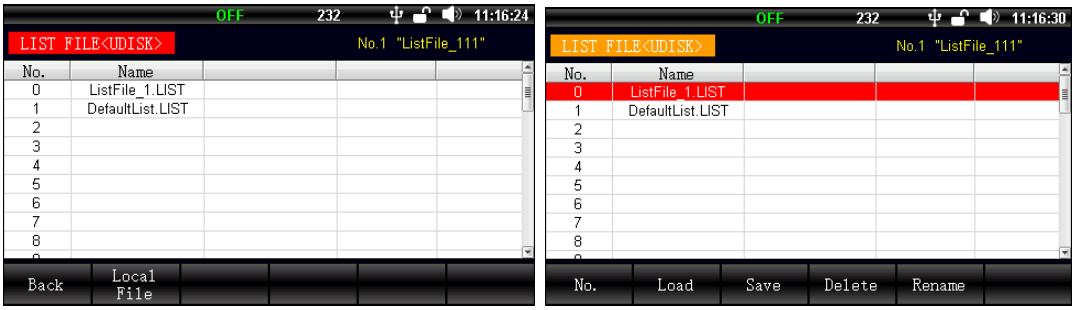
Rename	/	 Rename the file Method 1: Use rotary knob to select the character in virtual keyboard and press the rotary knob to input the selected character, select [Ent] key to confirm the setting. Method 2: Use the keyboard on front panel to input 0-9 digits, press [Ent] key to confirm the setting. The default filename cannot be renamed.
>	/	Switching the subordinate shortcut key menu.
PowerOnLoard	Off,On	On: The instrument will recall the file after the instrument boots up. If other files are set to boot recalling, this file cancles boot recalling by default.
AutoSave	Off,On	On: List setup will save in the line of the corresponding file in real-time. Only the file that boot recalling is enabled can be automatic saved.
Copy UDisk	/	Copy this file to USB, in the root directory of fileUDP67xx\LIST, the suffix is *.LIST.
<	/	Switching the previous shortcut key menu.

9.2 List File (USB)

Press [Udisk File] key to enter List file (Udisk). Users could import and export LIST files .LIST and .CSV by using shortcut keys (Udisk .LIST/Udisk .CSV) on the list interface, as shown in the following figure. The operation method of list file is the same as that of local files.

CSV is the abbreviation of Comma-Separated Values, called comma-separated values, is a plain text table data that can be edited in Office and modified, and then imported into the computer through the USB flash drive to achieve the editing of the list file.

Figure 9-2 List File (Udisk)



If press [Local File] shortcut key or plug out USB, the interface will switch to local page.
File operation can be set via rotary knob or press arrow keys. The page only supports the operating of load, save, delete and rename. List File (Udisk) has parts of the operation similar to List File (Local).

Create a csv file
Use Excel to create the file in the format shown on the right
1. It needs to be written from the top left corner
2. The first line is the title, and the following line is the data. The case of the title must be the same as that of the image
3. There are four columns, the first column is the row number, the second column is the voltage, the third column is the current, and the fourth column is the time
4. The unit of voltage is V, the unit of current is A, and the unit of time is s
After the file is modified, save it as CSV file and put it into the \UDP67XX\LIST\ folder of the U disk, where UDP67XX is the corresponding machine model, insert the U disk into the USB2.0 interface of the front panel of the machine, and import it into the machine.

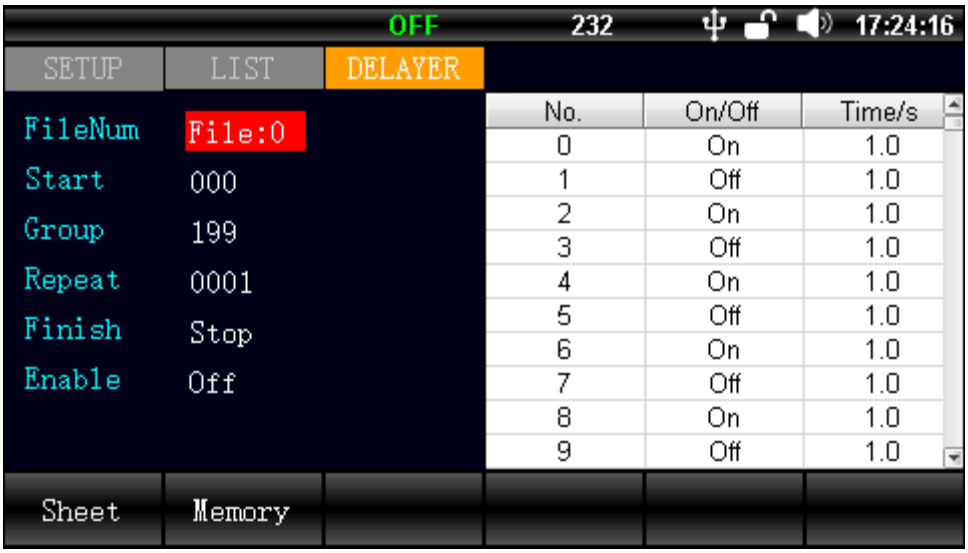
	A	B	C	D
1	Step	Volt	Curr	Time
2	0	1	1	1
3	1	1	1	1
4	2	1	1	1
5	3	1	1	1
6	4	1	1	1

Users could also export CSV files from the machine to the U disk, and then use Office to edit and import. The file name supports only English format and is less than 12 characters long. If the data line exceeds 200 lines, the remaining lines are not parsed.

10 Delayer Setup

Delayer is the simple version of list mode. If the local status is ON, the instrument outputs the parameter according to <Measure >. If the local status is off, the instrument will turn off the output. Press [Delayer] can step through <Measure>, <Delayer>, and stay at <Delayer> page, or you can press the [Delayer] under the screen in <measure> page.

Figure 10-1 Basic Parameter of Delayer

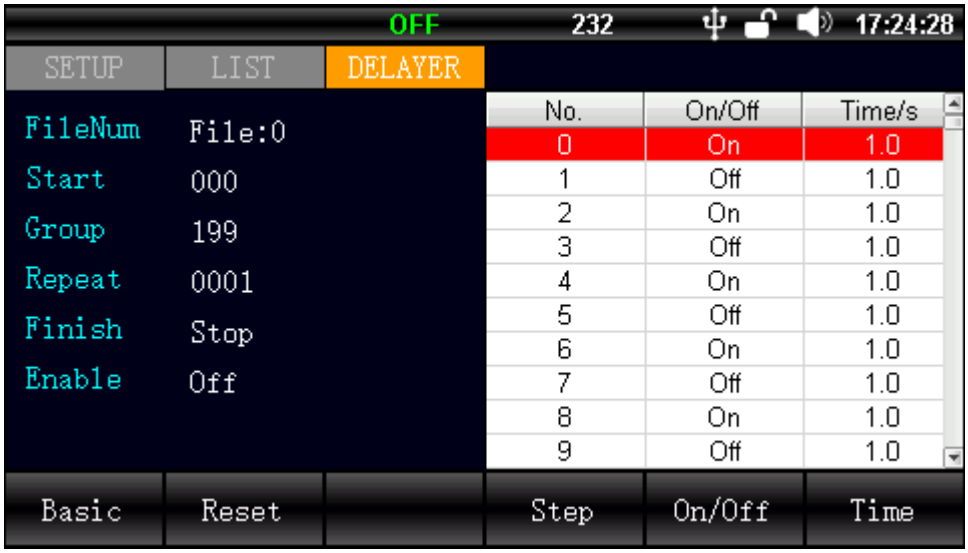


<Delayer Setup>

Shortcur Key	Setting	Description
FileNum	/	The currently loading list file, press [Save] shortcut key to enter <Delayer File> to save and recall the file.
Start	0-199	Select the line to start the test from the list on the right side, the default is 0.
Group	1-199	Count the output step starts from the initial group number, the default is 1.
Repeat	1-9999	Times of test cycly, the default is 1.
Finish	Stop, Hold	Stop: stop the output when the test is finished. Hold: output the last test item when the test is finished.
Enable	Off,On	Whether to enable the delayer test, if the delayer test is enabled, **DELA** displays in title bar. After the delayer test is enabled, press **[On/Off]** key to start the delayer test and the indicator will blinking to distinguish from the normal output. Enable the delayer test will turn off the list function.
Sheet		Enter sheet setting
Memory		Enter disk (local disk and Udisk)

Press [Sheet] key to enter the parameter setup of delayer output.

Figure 10-2 Parameter Setup of Delayer Output.



Shortcut key of delayer

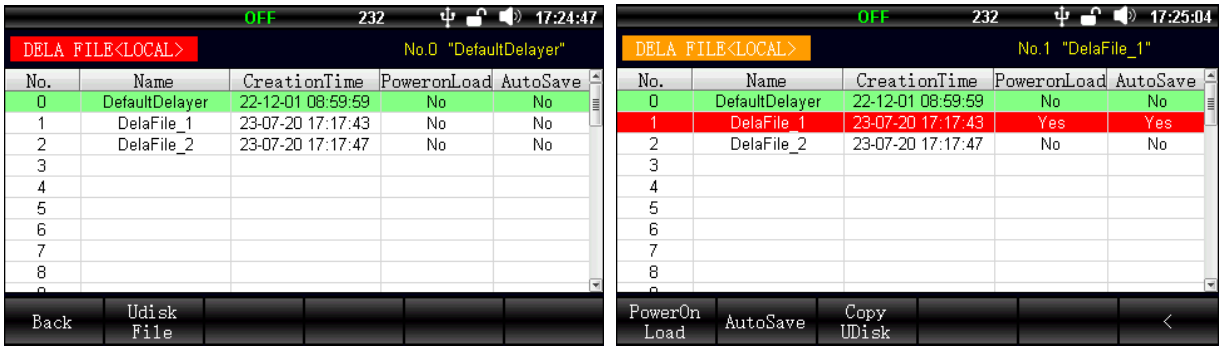
Shortcur Key	Setting	Description
Basic	/	Swithc to the basic parameter setup on the left side after press this key.
Reset	/	Reset the whole list on the right side.
Step	0-199	 Press Step key and then rotate rotary knob or use keyboard to input the line number.
On/Off	/	Press this key can step through On and Off in this line. On: Turn on the voltage output of this step. Off: Turn off the voltage output of this step.
Time	0.1-9999.9s	 Press Time key and rotate rotary knob or use keyboard to set the output time of this step.

11. Delayer File

Delayer file only save the parameter in <Delayer Setup> page, it can save on local or in USB. The local file can also export to USB.

11.1 Delayer File (Local)

Figure 11-1 Delayer File (Local)



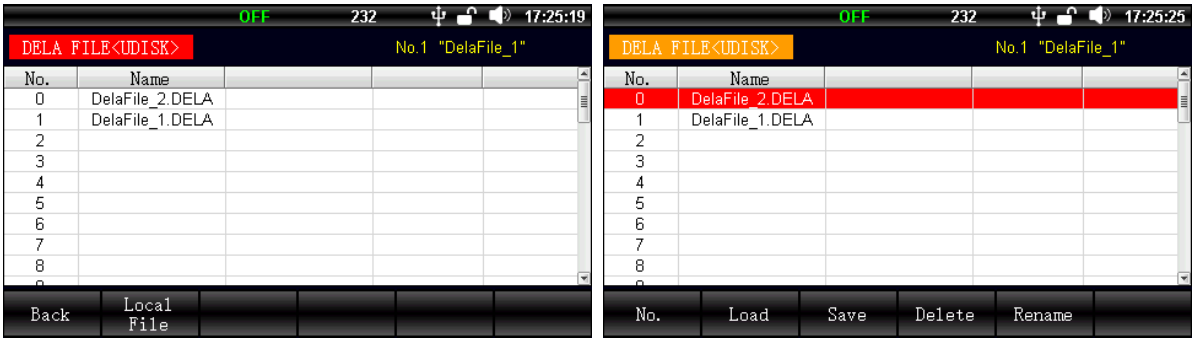
If the USB is inserted, press [**Udisk File**] shortcut key to manage the delayer file in USB. By turning the rotary knob or pressing arrow keys to enter the following table to manage the delayer file.

Shortcur key of delayer

Shortcur Key	Setting	Description
No.	0-39	The number of saved file, file number starts from 0 and cannot be deleted.
Load	/	Loading the file in this line, the current list setup will lost.
Save	/	Save the delayer setup into this line file. Blank line: create a new list file Existing file: overlay the current file and the name will not change.
Delete	/	Delete the current file and the default file cannot be deleted.
Rename	/	Rename the current file and the default file cannot be changd. The way of rename the file can refer to Rename in List File.
>	/	Switching the subordinate shortcut key menu.
PowerOnLoad	Off,On	On: The instrument will recall the file after the instrument boots up. If the boot recalling of this line is cancled, the default file wibb be enable boot recalling.
AutoSave	Off,On	On: Delayer setup will save in the line of the corresponding file in real-time. Only the file that boot recalling is enabled can be automatic saved.
Copy Udisk	/	Copy this file to USB, in the root directory of UDP67XX\DELA, the suffix is *.DELA.
<	/	Switching the previous shortcut key menu.

11.2 Delayer File (Udisk)

Figure 11-2 Delayer File (Udisk)

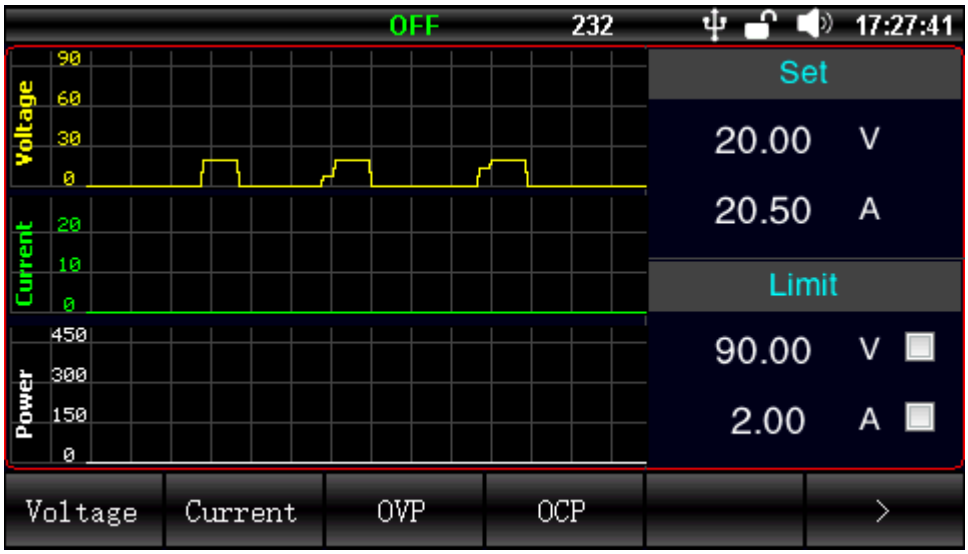


If press [Local File] shortcut key or plug out USB, the interface will switch to local page. Delayer file in USB only supports the operating of load, save, delete and rename.

12. Wave Display

Press [Wave] key to display the currently output wave of voltage, current and power. The wave refreshes once per 0.1s.

Figure 12-1 Wave Display



13. File Management

File management is support to save the parameter of list and delayer and also support USB operation. Press [File] shortcut key below in <Measure > to enter <File Management> page.

13.1 File Management (local)

In <Wage> page, press [File] under the screen, or in <measure> page, press [file] under the screen, we will enter the file <Local> page.

If USB is inserted, press <Udisk File**>** shortcut key to manage the file in USB. By turning the rotary knob or pressing arrow keys to enter the following table.

Shortcut key of file management

Shortcut Key	Setting	Description
No.	0-39	The number of saved file, number 0 is the default file and cannot be deleted.
Load	/	Loading the file in this line, the current list setup will lost.
Save	/	Save the setup into this line file. Blank line: create a new list file Existing file: overlay the current file and the name will not change.
Delete	/	Delete the current file and the default file cannot be deleted.
Rename	/	Rename the current file and the default file cannot be changd. The way of rename the file can refer to Rename in List File.
>	/	Display the subordinate shortcut key menu.
PowerOnLoad	Off,On	On: The instrument will recall the file after the instrument boots up. If the boot recalling of this line is cancled, the default file wibb be enable boot recalling.
AutoSave	Off,On	On: The setup will save in the line of the corresponding file in real-time. Only the file that boot recalling is enabled can be automatic saved.
Copy Udisk	/	Copy this file to USB, in the root directory of UDP67XX\CONFIG, the suffix is *.STA.
<	/	Display the previous shortcut key menu.

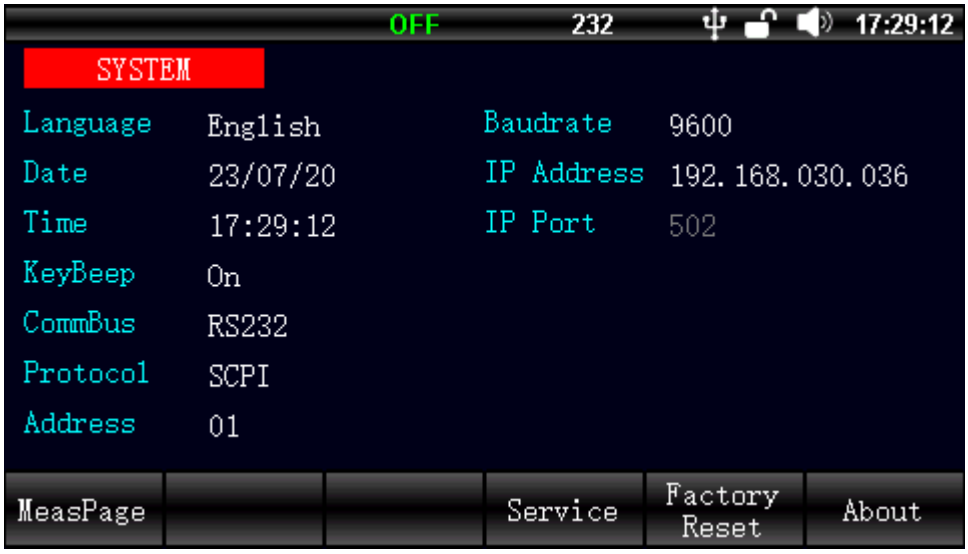
13.2 File Management (USB)

If press [Local File] shortcut key or plug out USB, the interface will switch to local page.

File management in USB only supports the operating of load, save, delete and rename. (The operation is same as Local file.)

14. System Setup (Menu)

Press [Menu] key to enter <System > page.



<System Setup>

Item	Setting	Description
Language	English, Chinese	Interface language, the default is simplified Chinese.
Date	/	Date format: year/month/day
Time	/	Time format: hour/minute/second, 24 hours system
KeyBeep	Off,On	Off: key sound is off and the icon display in status bar. On: key sound is on and the icon display in status bar.

CommBus	RS232, RS485, LAN, USB	RS232, RS485 and USB are serial port and the format as follow, 8 data bits, 1 stop bit, no check bit. USB is virtual serial port.
Protocol	SCPI, Modbus	The instrument supports the communication protocol of SCPI and Modbus
Address	1-32	Station address in Modbus protocol, it supports 0x00 broadcast communication.
Baud rate	9600,19200, 38400,57600,115200	The baud rate of RS232, RS485 and USB bus.
IP address	/	IP address when connecting LAN bus.
IP port	502	Port number of LAN bus, it cannot be changed.

Shortcut key at the bottom of the screen:

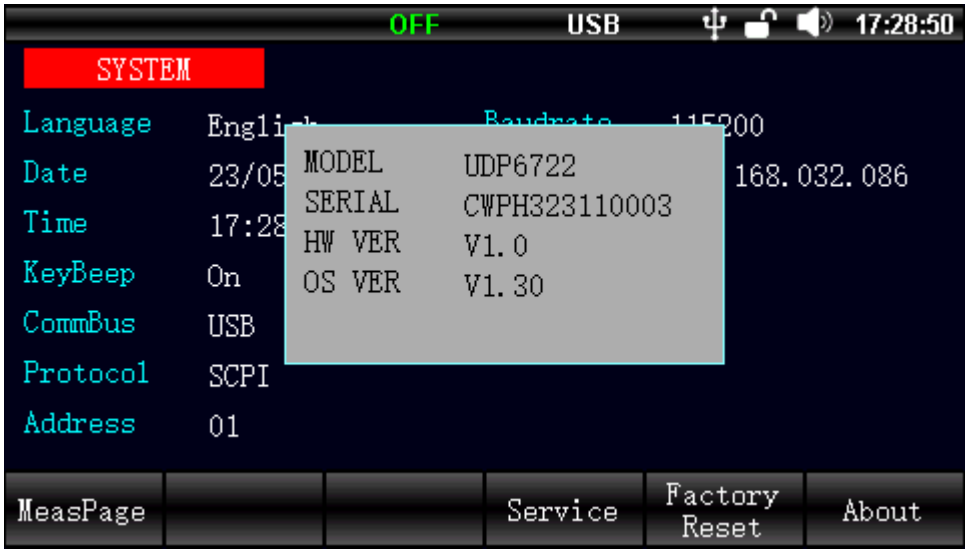
Measurement display: return to <Measure> page;

System service: for calibration (not open for user);

Factory setting: for restore the instrument to the factory setting;

About: Model/serial number/hardware version/software version of the instrument (as shown in the following figure).

Figure 13-3 <About> page



15. Remote Communication

15.1 RS-232 Port Setup

15.1.1 RS-232

RS-232 is the current widely used serial communication, it also known as the asynchronous communication. It is used for data communication between computers and computers, computers and peripherals. RS is the abbreviation of "Recommended Standard", 232 is the standard number, the standard is officially published by the American Electronics Industry Association (EIA) in 1969. It requires one bit send by a data line at a time. Usually, RS232 interface comes in the form of 9 pins (DB9) or 25 pins (DB25). The most commonly used RS-232 signals are shown in the following table:

Table Common RS-232 Signal

Signal	Abbreviation	Pin of 25-core connector	Pin of 9-core connector
Request To Send	RTS	4	7
Clear To Send	CTS	5	8
Data Set Ready	DSR	6	6
Data Carrier Detect	DCD	8	1
Data Terminal Ready	DTR	20	4
Transmitted Data	TXD	2	3
Received Data	RXD	3	2
Common Ground	GND	7	5

Except the above table, RS232 also has the minimum subset and that is the connecting way used by the instrument.

Table Minimum Subset of RS-232

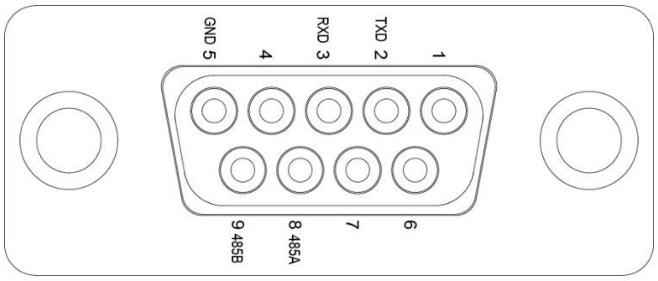
Signal	Abbreviation	Pin of 9-core connector
Transmitted Data	TXD	2
Received Data	RXD	3
Common Ground	GND	5

15.1.2 RS-232 Connecting

The instrument uses DB9 (femal head) interface.

Suggestion: To avoid electric shock, please turn off the power supply when plug the connector.

Figure 14-1 Interface Definition of DB9 (femal head) Front View



Connecting the instrument to PC via a direct line that has DB9 male head and DB9 femal head.

15.2 RS-485 Port Setup

RS485 uses half-duplex mode. RS485 uses part of the DB9 interface and the definition as follows.

DB9 Pin	Function
5	GND
8	485A
9	485B

If user uses Modbus protocol, it should set the local address.

15.3 LAN Port Setup

Figure 14-2 LAN Port on Rear Panel

Indicator of LAN port

LED	State	Meaning
Green	Illuminated	Connecting
	Blinking	Communicating
Orange	Extinguished	10M communication rate
	Illuminated	100M communication rate

15.4 USB Port Setup

USB virtual serial port communication: enable USB bus and the setting is same as RS232.

Figure 14-3 USB Port on Rear Panel

When USB bus is enabled and connecting to PC, user can find serial port number in PC management. Due to the different manchines, the serial port number of each PC is not necessarily the same.

15.5 Language

Communication supports SCP1 and Modbus commands, the detailes refers to "UDP6720 Series Programmable DC Power Supply- Programming Manual".

16. Appendix

16.1 Appendix A Maintenance and Cleaning

(1) General Maintenance

Keep the instrument away from the direct sunlight.

Caution

Keep sprays, liquids and solvents away from the instrument or probe to avoid damaging the instrument or probe.

(2) Cleaning

Check the instrument frequently according to the operating condition. Follow these steps to clean the external surface of the instrument:

a. Please use a soft cloth to wipe the dust outside the instrument.

b. When cleaning the LCD screen, please pay attention and protect the transparent LCD screen.

c. When cleaning the dust screen, use a screwdriver to remove the screws of the dust cover and then remove the dust screen. After cleaning, install the dust screen in sequence.

d. Please disconnect the power supply, then wipe the instrument with a damp but not dripping soft cloth. Do not use any abrasive chemical cleaning agent on the instrument or probes.

Warning

Please confirm that the instrument is completely dry before use, to avoid electrical shorts or even personal injury caused by moisture.

17. Limited Warranty and Liability

Uni-T guarantees that the Instrument product is free from any defect in material and workmanship within three years from the purchase date. This warranty does not apply to damages caused by accident, negligence, misuse, modification, contamination or improper handling. If you need warranty service within the warranty period, please contact your seller directly. Uni-T will not be responsible for any special, indirect, incidental or subsequent damage or loss caused by using this device. For the probes and accessories, the warranty period is one year. Visit instrument.uni-trend.com for full warranty information.

Learn more at: www.uni-trend.com

Register your product to confirm your ownership. You will also get product notifications, update alerts, exclusive offers and all the latest information you need to know.

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