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Quick Start Guide

UDP4303S Programmable Linear DC Power Supply

REV 0.1

July 2024

Safety Instructions

⚠ ANGER / WARNING: To avoid electric shock and personal injury, please follow the safety precautions.

⚠ CAUTION: If handled improperly, it may damage the product or other devices connected to the product.

Disclaimer

Before using the product, the user must read the following safety information carefully. UNI-T shall not be liable for the personal injury and property losses caused by the user's failure to comply with these terms.

Instrument Grounding	Please use the cable provided by the manufacturer to connect the device. Please ensure the power ground wire is properly connected.
Operating voltage	Please ensure that the operating voltage is within 10% of the rated range to avoid damaging the instrument.
Input voltage	Please use an AC 110 V-230 V 50/60 Hz power supply, a nationally approved power cord, and ensure the insulating layer is in good condition.
Inspecting the wire of the instrument	Check the condition of the cable's insulating layer to see if it is broken, bare, or functional. If the cable is damaged, please replace it before connecting it to the instrument.
Fuse wire	Only the specified fuse wire is allowed to be used.
Over-voltage protection	Please ensure the instrument is not subjected to over-voltage (such as voltage caused by lightning) to protect operating personnel from electric shock.
Do not open the case while operating	Please do not operating the instrument if the outer shell is opened and do not alter the internal circuit.
Do not touch live parts	When the instrument is operating, do not touch bare wires, spare input terminals, or the circuit being tested. Be extremely careful when measuring voltages higher than 60V DC or 30V AC to prevent electric shock.
Do Not use the instrument in an explosive atmosphere	Do not use the instrument in flammable or explosive gas, steam, or dusty environments. The use of any electronic equipment in such environments poses a risk to personal safety.

Safety Sign

	Grounding		ON (Power)
	Protective Grounding		OFF (Power)
	Signal Ground		Connect to the chassis or case
	Danger		

Environment-friendly Use Period

This environmentally friendly use period (EFUP) mark indicates that dangerous or toxic substances will not leak or cause damage within this indicated time period. The environment-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.

Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC

Must not be discarded in the trash can.

Operation Environment

UDP4303S programmable linear DC power supply can only be used under the normal temperature and non-condensing conditions, refer to the following table for the general environmental requirements.

Operation Environment	Requirements
Operating temperature	0℃-40℃
Operating humidity	20%-80% (non-condensing)
Storage temperature	-10℃ to 60℃
Altitude	≤ 2000 meters
Pullation degree	Class 2

Cleaning

To prevent electric shock, unplug the power cord before cleaning. Use a clean cloth slightly dampened with water to wipe the outer shell and panel and keep them dry. Avoid letting water enter the instrument. Do not clean the inside of the instrument.

Caution: Do not use solvents (such as alcohol or gasoline) to clean instrument.

Chapter 1 Inspection and Installation

1.1 General Inspection

It is recommended to inspect the instrument follow the steps below before using the UDP4303S programmable linear DC power supply.

(1) Check for Damages caused by Transport

If the packaging carton or the foam plastic cushions are severely damaged, please contact the UNI-T distributor of this product immediately.

(2) Check Accessories

The details of the supplied accessories are described in the MSO3000HD Series High-Definition Oscilloscopes accessories section in this manual. Please refer to this section for the list of accessories. If any accessories are missing or damaged, contact UNI-T or the local distributors of this product.

(3) Machine Inspection

If the instrument appears to be damaged, not working properly, or has failed the functionality test, please contact UNI-T or local distributors of this product.

If the equipment is damaged due to shipping, please keep the packaging and notify both the transportation department and UNI-T distributors, UNI-T will arrange maintenance or replacement.

Recommended Calibration Period

The calibration period for this instrument is one year.

Table 1-1 Packing List

Accessories	Quantity	Remarks
UDP4303 Programmable Linear DC Power Supply	1	
Power Cord	1	
Factory Calibration Report	1	
USB Cable	1	
WJ2EDGKM-5.08-8P-1Y-00A	2	
WJ2EDGKM-5.08-5P-1Y-00A	1	

Note:

Once the packing list is confirmed, suggest keeping the packing materials for possible future storage or shipment.

1.2 Power-on Inspection

When the instrument is rebooted, ensure that the time interval between the two startups is greater than 5 seconds.

1. Connecting to power

UDP4303S power supply supports various AC power supply inputs. The AC selector setting on the rear panel varies depending on the input power connected, as shown in the table below.

Table 1-2 AC Input Power Specifications and Voltage Selector Settings

AC Input Power	AC Selector
100 V_{ac} ± 10%, 50 Hz-60 Hz	100 V_{ac}
120 V_{ac} ± 10%, 50 Hz-60 Hz	120 V_{ac}
220 V_{ac} ± 10%, 50 Hz-60 Hz	220 V_{ac}
230 V_{ac} ± 10% (Maximum 250 V_{ac}), 50 Hz-60 Hz	230 V_{ac}

Please connect the AC power to the instrument according to Table 1-2.

2. Check the voltage selector on the rear panel

Ensure that the voltage selector (100 V, 120 V, 220 V, or 230 V) on the rear panel of the instrument matches the actual input voltage.

If the input AC voltage selector needs to be changed, please use the two AC selector switches on the rear panel, as shown in the following figure.

Set the input voltage selector according to the figure above. For example, to use 120 V_{ac} AC power, slide both switches to the right; to use 220 V_{ac} AC power, slide both switches to the left.

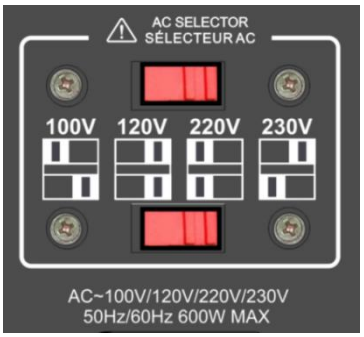

Figure 1-1 AC Selector Switch

3. Check the fuse

Select the fuse according to the actual input voltage. Refer to the table below.

Table 1-3 Fuse Specification

AC Input Voltage	Fuse
100 V_{ac} ± 10%, 50 Hz-60 Hz	T8A/250 V_{ac}
120 V_{ac} ± 10%, 50 Hz-60 Hz	T8A/250 V_{ac}
220 V_{ac} ± 10%, 5 0Hz-60 Hz	T4A/250 V_{ac}
230 V_{ac} ± 10% (Maximum 250 V_{ac}), 50 Hz-60 Hz	T4A/250 V_{ac}

Replacing the Fuse

Follow these steps to replace the fuse:

1. Turn off the instrument and disconnect the power cable.
2. Insert a straight screwdriver into the groove of the power slot and gently pry out the fuse socket.
3. Remove the fuse and replace it with a specified one. Refer to Figure 1-2.
4. Reinstall the fuse socket to the power socket, ensuring the correct orientation.

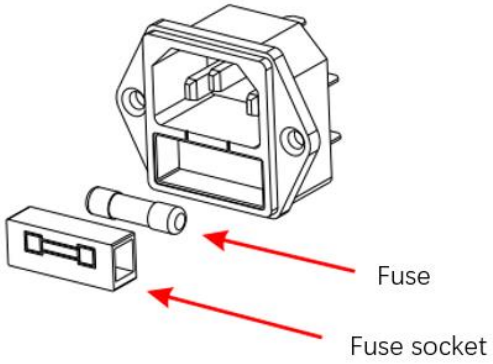

Figure 1-2 Exploded View of Power Socket

⚠ WARNING

- To avoid electric shock, the instrument should be properly grounded.
- To avoid personal injury, disconnect the power before replacing the fuse.
- To avoid electric shock or fire, ensure that the power supply matches to the actual input voltage and replace the fuse with the specified one.

1.3 Connecting the Outputs

This series power is equipped with front and rear output terminals. This section describes how to make front and rear connections.

Front Terminal

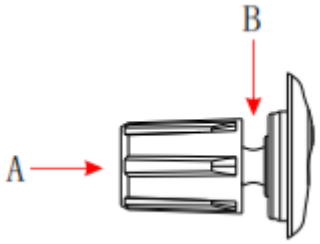

Figure 2-7 Front Outputs Connection

Method 1: Connect wires to the front of the terminals at location A, as shown in the figure above.

Method 2: Rotate the terminal block screws counterclockwise and connect wires to the terminals in location **B,** as shown above in the figure. Then, rotate the screws clockwise to tighten the wires. This method helps reduce errors caused by the terminal resistance.

Caution:

Disconnect the AC power before making front panel connections. Ensure all wires and lug plates are properly connected to prevent currents from damaging the loads.

Rear Terminal

Insert the connector plug into the rear terminal and secure it by tightening the locking screws.

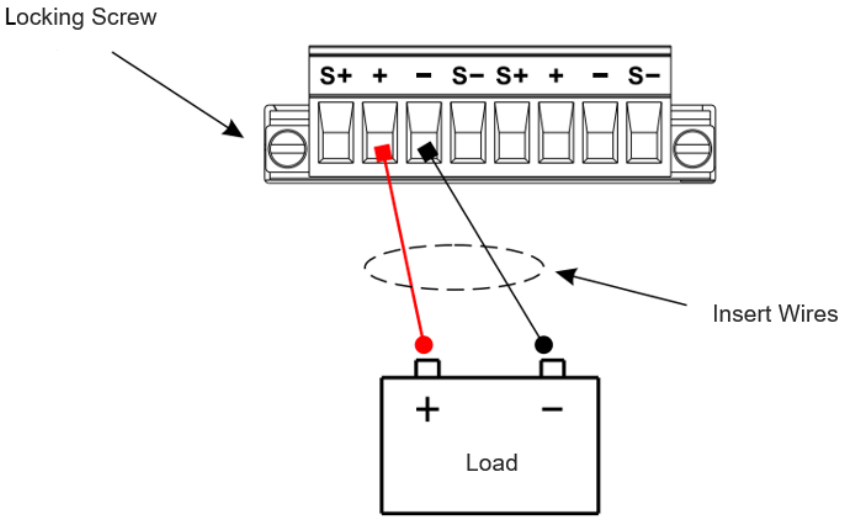

Figure 2-8 Rear Outputs Connections

⚠ CAUTION

Disconnect the AC power before making front panel connections. Ensure all wires and lug plates are properly connected to prevent currents from damaging the loads.

Do not use both front and rear panel output terminals concurrently. Only one set of terminals can be selected at a time.

Chapter 2 Quick Guide

This chapter provides a brief introduction to the front panel, rear panel, keyboard, and LCD functions of the UDP4303S, ensuring the user can quickly become familiar with the instrument's operation.

2.1 Main Features

- UDP4303S: 32 V/3A, 32 V/3 A, 15 V/3 A, 6 V/10 A
- Electric isolation between 4 channels, independent output, with a maximum output power of 297 W
- 4.3 inch TFT-LCD
- Supports internal series and parallel connections for CH1 and CH2
- Minimum current measurement resolution of 1 μA
- Capability to measure and display dynamic ranges of current
- Excellent programming and readback accuracy
- Fast transient response time: < 50 μs
- Front and rear panel output terminals
- Supports 2-wire and 4-wire for remote sensing
- Supports a maximum of 512 group serial outputs, with a minimum dwell time of 1 ms, and includes various built-in fundamental waveforms
- Low output ripple and noise: < 350 μV_{rms} /2 mV_{pp}
- Command processing time: < 10 ms
- Automatic switchover low and high range measurement
- Supports timing output, energy consumption analysis (IoT), data recording and analysis
- Supports a minimum of 1 ms pulse current waveform
- Supports standard three rack-units (3U), 1/2-rack form factor
- Supports upper computer control
- Multiple protections: OVP, OCP, OTP, and Sense; OCP time can be set from 0 ms to 1000 ms
- High and low current measurements support high-speed sampling at 8 kSa/s in full channel mode
- Various standard interfaces: USB Host, USB Device, RS-232, Sense, LAN, and Digital I/O based on SCPI (Standard Commands for Programmable Instruments)

Appearance and Dimensions

Front View

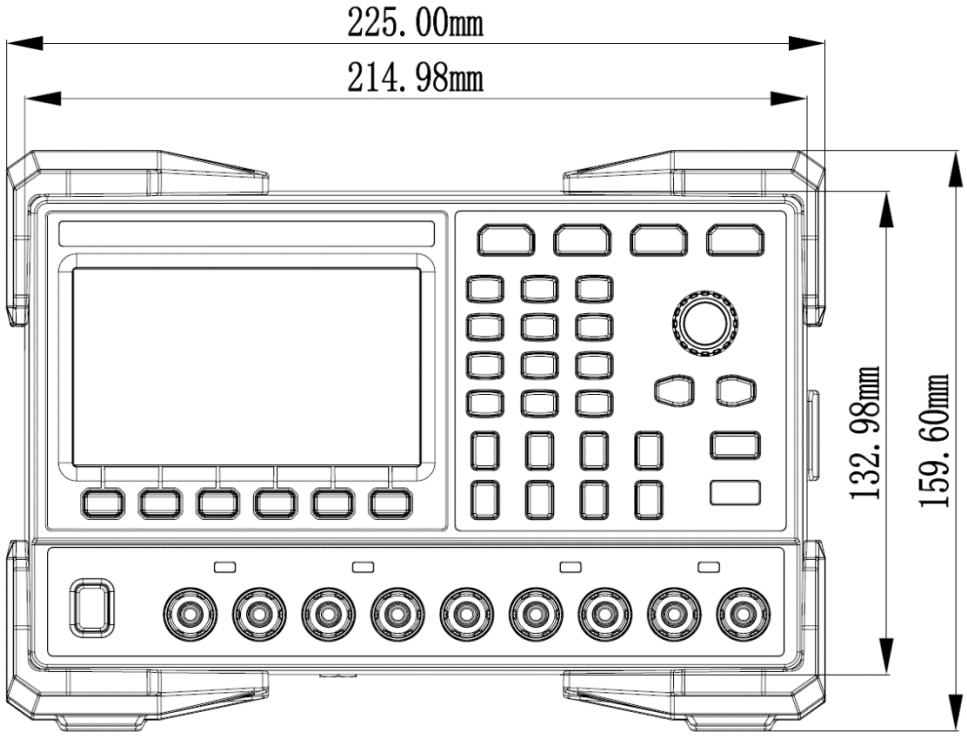

Figure 2-1 Front View

Side View

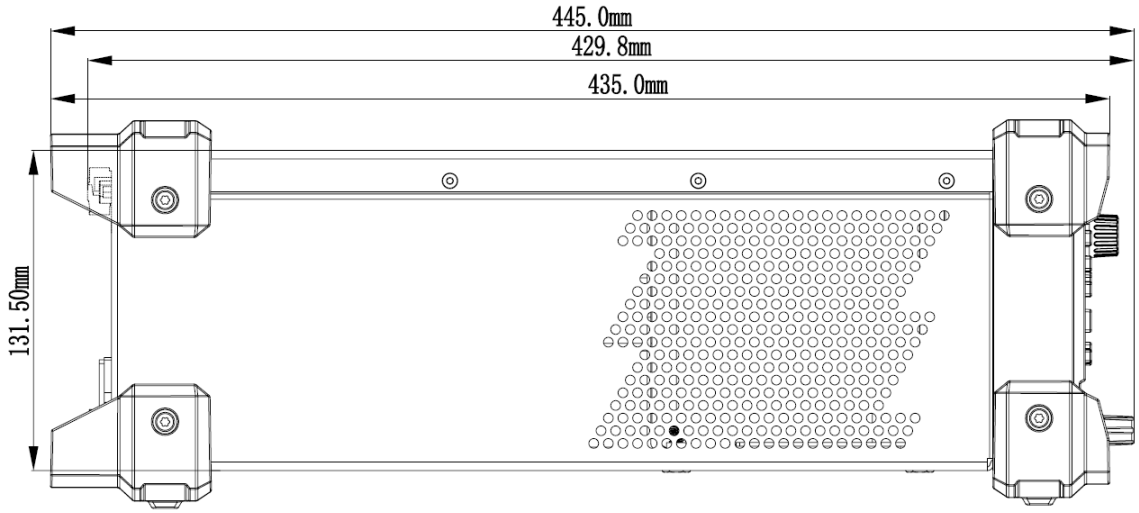

Figure 2-2 Side View

2.3 Front Panel

Figure 2-3 UDP4303S Front Panel

1. 4.3-inch TFT-LCD
2. Functional keys
3. Parameter setting area
4. Channel selection and Output ON/OFF keys
5. All channel selection and Output ON/OFF keys
6. Output terminals
7. CC/CV indicator
8. Power switch
9. Function menu/F1-F6 keys (named by the specified function, standard names are F1-F6 from left to right)
10. USB 2.0 Host port

2.4 Keypad

Figure 2-4 UDP4303S Keypad

Table 2-1 UDP4303S Keypad Description

Key	Description
Home	Short press to enable the main menu Long press to screenshot
Menu	enter the menu
Wave	Press to display waveform
Lock	Short press to lock the key Long press to unlock the key
Numeric keypad	To input the numerical value for the parameter
Arrow keys ←, →	To select the digit place for editing the parameter
Encoder rotary knob	Edit and select the numeric value Short press to confirm the selection (equivalent to "Enter" key)
Esc	Return to previous level Exit data editing
CH1-4	Channel selection keys
On Off	Channel ON/OFF keys
All On Off	All channel ON/OFF keys

2.5 Rear Panel

Figure 2-5 UDP4303S Rear Panel

Table 2-2 UDP4303S Rear Panel Description

No.	Name	Description
1	CH3 and CH4	Remote sensing output port for CH3 and CH4
2	USB DEVICE	Connect the instrument as "Slave" device to external USB device (such as PC)
3	Digital I/O	Digital I/O port
4	RS232 port	Serial communication interface
5	LAN port	Connected to the LAN network via RJ45 interface
6	AC voltage selector	To select the specification of the input voltage (100 V_{ac}, 120 V_{ac}, 220 V_{ac} or 230 V_{ac}, refer to *Connecting to power*)
7	AC power inlet socket	AC inlet power connector
8	Fuse	The fuse rating is related to the actual input voltage of the instrument model (refer to *Replacing the fuse*)
9	Ground terminal	-
10	Fan ventilation hole	-
11	CH1 and CH2	Remote sensing output port for CH1 and CH2

2.6 Icon and Character Descriptions on LCD

Figure 2-6 UDP4303S User Interface

Table 2-3 User Interface

No.	Description
1	Interface function name
2	Channel identifier
3	Remote sense state (S indicates remote sense ON; if no display indicates remote sense OFF.)
4	Channel output state OFF: Disable the output CV: Constant voltage output CC: Constant current output
5	Actual output voltage
6	Actual output current
7	Actual output power
8	Voltage and current setting value (constant)
9	Over-voltage and over-current protection values (highlight indicates over-voltage and over-current protection are enabled and can be enabled separately; no highlight indicates that these functions are disabled.)
10	Function keys
11	Status bar: The following icons indicate the system status. : The screen is locked. : A USB flash drive is detected. : Network connected : The beeper is enabled. : The beeper is disabled. OTP: OTP is enabled. (1): The list output mode is enabled, "(1)" indicates CH1 is operating in list output mode. (1): The delay timer mode is enabled, "(1)" indicates CH1 is operating in delay timer mode. (1): The monitor function is enabled, "(1)" indicates CH1 is operating in monitor mode. : The trigger is enabled. : The recorder is enabled.

Chapter 3. Troubleshooting

The following failures may occur during the use of the instrument. Please first try to handle the problem according to the following methods; if the problem remains unsolved, please contact UNI-T.

1. The instrument does not start.

a. Check whether the power cord is correctly connected.
b. Check whether the power switch on the front panel is turned on.
c. Unplug the power cord, and check whether the voltage selector is at the proper scale, whether the fuse specification is correct, and the fuse is in good condition.
   To replace the fuse, please refer to *Replacing the fuse*.
d. If the problem persists, please contact UNI-T.

2. The constant voltage output is abnormal.

a. Check whether the maximum output power of the selected meets the load requirement. If the load requirement is met, go to the next step.
b. Check whether the cable connecting the load and power supply is short circuited and whether it is in good contact.
c. Check whether the load works normally.
d. Check whether the current setting value of this scale is proper; if it is too low, increase the current setting value properly.
e. If the problem persists, please contact UNI-T.

3. The constant current output is abnormal.

a. Check whether the maximum output power of the selected meets the load requirement. If the load requirement is met, go to the next step.
b. Check whether the cable connecting the load and power supply is short circuited and whether it is in good contact.
c. Check whether the load works normally.
d. Check whether the voltage setting value of this scale is proper; if it is too low, increase the current setting value properly.
e. If the problem persists, please contact UNI-T.

4. The USB flash drive cannot be recognized.

a. Check whether the USB flash drive can work normally.
b. Restart the instrument and insert the USB storage device to check.
c. If the problem persists, please contact UNI-T.

Chapter 4 Remote Control

UDP4303S offers two methods for remote control.

1. Custom Programming

   The user can perform the programming control on the oscilloscope through SCPI (Standard Commands for Programmable Instruments). For detailed descriptions on command and programming, please refer to *UDP4303S Programmable Linear DC Power Supply-Programming Manual*.

2. PC Software Control (Instrument Application)

   Users can remotely control the instrument by sending commands using PC software. It is recommended to use the Instrument Application software provided by UNI-T. The software can be downloaded through the (https://www.uni-trend.com).

   Operating steps:

   - Setup the communication between the instrument and a PC
   - Open the Instrument Application software and search the instrument source
   - Open the remote-control panel and send the command

   This device supports communication with a computer via USB, LAN, and RS232 interfaces to achieve remote control. Remote control is implemented based on the SCPI command set.

   Note: Before connecting the communication cable, please power off the instrument to avoid damaging the communication interface.

Chapter 5. Contact Us

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Preface

Thank you for choosing Uni-T brand new product. To safely operate this equipment, please review this manual thoroughly, pay close attention to the safety notes.
After reading this manual, it is recommended to keep the manual at an easily accessible place, preferably close to the device, for future reference.

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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.