Programmable DC Power Supply

0~36V · 0~5A · 180W Multimeter · Bluetooth · PC software

USER MANUAL

Model **IPS3005**



■ 180W adjustable DC output · 25000-count true-RMS DMM

Contents

1	Safety	3
2	Parts and controls	4
3	Power supply functions	9
4	Multimeter functions	14
5	Data logging and system settings	16
6	PC software and Bluetooth	18
7	Specifications	22
8	Maintenance and warranty	25
9	Compliance	26

About this manual

This manual describes the safe operation, functions and specifications of the **IPS3005** programmable DC power supply — an adjustable DC power source with a built-in high-accuracy multimeter. It supports DC, USB-C PD and internal lithium-battery power supply; the output channels cover banana jacks, USB-A and USB-C fast-charge ports, with up to 180 W output power. The multimeter uses 25000-count high-accuracy sampling, with built-in Bluetooth wireless communication and PC host software that can synchronise power-supply settings and acquire, store and export measurement curves and data in real time — suitable for laboratory debugging, electronic repair, measurement and other scenarios.

1 Safety

To avoid the risk of electric shock, fire and personal injury, read this chapter completely before using the device, and operate it only for the purposes described in this manual; otherwise the protective performance of the device will be greatly reduced.

- Before use, check the case for cracks or plastic damage and make sure the insulation of the input ports is intact.
- Follow this manual strictly: use the correct input port and matching function position, and measure only within the ranges stated in this manual.
- Do not use the device in flammable or explosive gas or vapour atmospheres, or in very humid locations.
- When holding the test probes, keep your fingers behind the finger guard.
- After connecting the device to a circuit under test, do not touch unused input terminals; disconnect the probes from the circuit before switching measurement functions.
- DC voltages above 36 V and AC voltages above 25 V pose a shock hazard — avoid touching live points. Wrong function or range selection can damage the instrument or cause injury; confirm the correct position before use.
- Check the output polarity before switching on the output; never insert or remove output connections live.
- For DC input, never reverse the polarity.
- When connecting live loads, a reverse-current protection circuit in the output loop is recommended to prevent damage from reverse voltage.

> Never exceed the rated maximum measuring voltage. Never apply voltage while in continuity, diode, resistance, capacitance or millivolt functions; de-energise the circuit and discharge all high-voltage capacitors before testing.

2 Parts and controls

2.1 Front panel



Fig. 1 Front panel

① Display

② Power-supply key area

③ Multimeter key area

④ USB output

⑤ Adjustable output

⑥ Multimeter input

⑦ Battery charging and protocol output

2.2 Rear panel



Fig. 2 Rear panel

① USB communication
② DC input
③ PD input
④ Power switch

2.3 Power-supply display

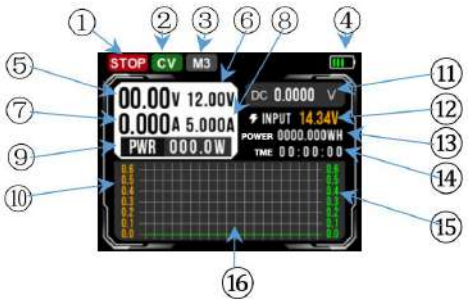


Fig. 3 Power-supply display

①	Running status: STOP / RUN / T-C / OVP / OCP / OTP / LVP / EIP / OPP
②	Working mode: CV (constant voltage), CC (constant current)
③	Group indicator: preset output parameter groups M1–M10
④	Battery symbol: battery level and charging status
⑤	Output voltage: actual output voltage
⑥	Set voltage: preset target output voltage

①	Running status: STOP / RUN / T-C / OVP / OCP / OTP / LVP / EIP / OPP
⑦	Output current: actual output current
⑧	Set current: preset target output current
⑨	Output power: actual output power
⑩	Voltage scale: bar scale of the voltage value
⑪	Measured value: multimeter reading
⑫	Input voltage: supply input voltage
⑬	Energy record: accumulated output energy (metering on)
⑭	Time record: accumulated output time (metering on)
⑮	Current scale: bar scale of the current value
⑯	Waveform: real-time output voltage / current waveform

Status symbols:

Symbol	Meaning
STOP	Stopped
RUN	Running normally
T-C	Fast-charge protocol output
OVP	Over-voltage protection
OCP	Over-current protection
OTP	Over-temperature protection
LVP	Under-voltage protection
EIP	Excess input power
OPP	Over-power protection
V-SET	Set voltage

Symbol	Meaning
I-SET	Set current
INPUT	Input voltage
NRG	Energy
CY	Capacity
TIME	Time
VOLTAGE	Output voltage
CURRENT	Output current
POWER	Output power
OVP-ALA	Over-voltage alarm
OCP-ALA	Over-current alarm

2.4 Panel keys



Fig. 4 Key panel

Key	Short press	Long press / rotate
M	Switch data group	Open the data-group editor

Key	Short press	Long press / rotate
SAVE	Switch display, call up the waveform	Save a screenshot
POWER/DMM	Switch between power-supply and multimeter screens	
ON/OFF (output)	Switch the power output on / off	Enter sleep mode
SET	Set voltage / current on the working screen; exit settings	Enter or exit Bluetooth mode
TIME	Power screen: enter multi-group cycle output; record mode: save data	Power screen: enter or exit group editing; record mode: return to previous value
V⎓/V~	Switch DC voltage, AC voltage, DC millivolt, AC millivolt	
Ω	Switch resistance measurement	
CAP	Switch capacitance measurement	
HOLD	Data hold	Enter or exit REL relative measurement
Diode	Switch diode measurement	Record mode: clear records; metering mode: reset metering values and time
Continuity	Switch continuity measurement	

Key	Short press	Long press / rotate
MENU/encoder	Select the menu item or digit to set	Long press: enter or exit setting; rotate: adjust the horizontal scale on the waveform screen, toggle energy/capacity, move the menu selection or change digits
ON/OFF (fast charge)	Switch fast-charge output on / off (DC or PD powered)	Open or close the fast-charge screen

3 Power supply functions

3.1 Power input

Method 1: DC input — connect to the DC input port, 9–36 V DC.

Method 2: USB-C PD input — connect a fast-charge adapter or power bank to the PD input port; the device detects it automatically and draws the matching input voltage.

Method 3: internal battery — fit four 18650 cells in the battery compartment.

> 1. Keep the DC input voltage within 9–36 V. 2. Observe the correct polarity for DC input and battery installation. 3. Make sure the metal contacts of the lithium cells are firmly seated.

3.2 Power output

1. Connect the power source and press the power key to switch the device on.
2. Preset the target output voltage and current, or recall a saved group M1–M10.

3. Connect the output leads to the banana jacks and check the load polarity; press the red ON/OFF key to start the output.
4. During normal output the banana-jack indicator lights up and the screen refreshes the output values in real time.



Fig. 5 Output and measurement input terminals

- **a.** The waveform screen shows the dynamic behaviour of voltage and current.
- **b.** With metering enabled, the output time, accumulated energy and capacity are recorded automatically; long-press the Diode key to reset the metering data.
- **c.** Protection thresholds such as OVP / OCP / OTP can be customised as required.
- **d.** The 5 V/1 A port is a fixed-voltage output; its voltage cannot be adjusted.

3.3 Power ratings

Mode	Description
Battery input	4 × 18650 in series, approx. 16.8 V full (4.2 V × 4), nominal 14.8 V (3.7 V × 4); max. continuous output approx. 25–30 W (limited by cell internal resistance — noticeable voltage drop at 5 A)
DC input	External DC input 9–36 V; power depends on the external adapter

Mode	Description
PD input	PD / QC fast-charge input, up to 28 V (cable with eMarker chip required), up to 140 W input power (depends on the adapter)
USB output	Fixed 5 V / 1 A
Adjustable output	0–36 V, 0–5 A, max. 180 W (36 V × 5 A), limited by the input power; full-load operation recommended at ambient temperatures up to 25 °C
Protocol output	PD3.0/3.1, PPS, QC2.0/3.0/4+/5, SCP/FCP, OPPO VOOC/SVOOC, VIVO, AFC, UFCS etc., max. 60 W per port
Battery charging	4-series 18650 charging at 16.8 V (4.2 V per cell), max. charging power approx. 30 W (PD input)

3.4 Multi-group cycle output

1. Long-press TIME to open the parameter-group editor and set the voltage, current and cycle duration of each group; a duration of 0 excludes the group from the cycle.
2. Short-press TIME to enter cycle-output mode; press MENU to set the number of cycles.
3. Press ON/OFF to start the cycle output.

3.5 Protection settings

Long-press the encoder knob to enter the system settings menu; short-press the knob to confirm an option and rotate it to select the protection parameter to adjust.

When any protection triggers, the device cuts off the output immediately, shows a fault message on the screen and saves the protection record, which can be reviewed under “Records” in the settings menu.

Protection	Description
OVP over-voltage	Output stops automatically when the output voltage exceeds the threshold
OCP over-current	Output stops automatically when the output current exceeds the threshold
OTP over-temperature	Output stops automatically when the internal temperature exceeds the threshold
OPP over-power	Output stops automatically when the total output power exceeds the threshold
LVP under-voltage	Output stops when the output voltage falls below the threshold; fixed 12 V threshold on battery power
EIP excess input power	Triggered when the output power exceeds the rated power of the input supply

3.6 Fast-charge protocol output

1. Connect a USB-C fast-charge cable to the fast-charge output port, then connect the powered device.
2. Press the ON/OFF key above the port; the port outputs the negotiated protocol voltage automatically.
3. On internal battery power, the output starts automatically when a device is connected.



Fig. 6 Fast-charge / battery-charging port

Supported protocols: PD2.0 / PD3.0, QC2.0 / QC3.0 / QC3+, FCP 12 V, AFC 12 V, SCP 3.3–10 V 2.2 A, Apple 5 V/2.4 A, BC1.2 DCP.

3.7 Battery charging

Battery charging shares the USB-C port with the fast-charge output. With the device switched on, connect a fast-charge adapter to charge the internal lithium batteries automatically; long-press the ON/OFF key of the port to view the charging voltage and current on the screen.

a. Charge the batteries only while the device is switched on. b. With protected 18650 cells of poor voltage consistency, charging may be slow or may not reach full charge.

4 Multimeter functions

4.1 Display



Fig. 7 Multimeter display

①	Measured value: reading and unit
②	Bluetooth icon: flashing = waiting for connection; steady = connected
③	Record mode: RECORD indicates record mode is active
④	Power output: output value of the power supply
⑤	Power setting: preset value of the power supply
⑥	Maximum: largest measured value
⑦	Minimum: smallest measured value
⑧	Average: average of the measurements
⑨	Frequency: measured AC frequency
⑩	Waveform: waveform of the measured value
⑪	Recorded values: logged measurement values

4.2 Measuring AC and DC voltage

1. Insert the black probe into the COM terminal and the red probe into the INPUT terminal.
2. Select the suitable function with the voltage key: DC voltage, AC voltage, DC millivolt or AC millivolt.
3. Touch the correct test points of the circuit with the probes.
4. Read the voltage value on the display.

4.3 Measuring resistance

1. Insert the black probe into the COM terminal and the red probe into the INPUT terminal.
2. Press the resistance key to select the resistance function.
3. Touch the test points of the circuit with the probes.
4. Read the resistance value on the display.

4.4 Measuring frequency

1. Insert the black probe into the COM terminal and the red probe into the INPUT terminal.
2. Press the voltage key to select AC.
3. Touch the test points of the circuit with the probes.
4. Read the frequency value on the display.

4.5 Continuity test

1. Insert the black probe into the COM terminal and the red probe into the INPUT terminal.
2. Press the buzzer key to select the continuity function.
3. Touch the two points of the circuit under test with the probes; a tone indicates continuity.

4.6 Measuring capacitance

1. Insert the black probe into the COM terminal and the red probe into the INPUT terminal.
2. Press the capacitance key to select the capacitance function.
3. Touch the two ends of the capacitor with the probes.
4. Read the capacitance value once the reading is stable.

4.7 Diode test

1. Press the diode key to select the diode function.
2. Connect the red probe to the anode and the black probe to the cathode of the diode under test.
3. Read the forward voltage on the display. If the probe polarity is reversed or the diode is defective, no forward voltage is shown.

Diode forward voltage	Buzzer tone
< 0.02 V	Long beep
0.02–0.45 V	Two short beeps
0.45–0.75 V	One short beep
0.75–1.5 V	Three rapid short beeps
> 1.5 V	No tone

Maximum diode test voltage 3 V.

5 Data logging and system settings

5.1 Recording measurement data

1. Press SAVE to switch to the data-record screen.
2. Press MENU to log the current reading; up to 100 records can be stored.
3. Long-press TIME to return to the previous record.

4. Long-press the Diode key to clear all recorded values.
5. Short-press TIME to save the recorded values (txt format).
6. Restart the power supply to export the saved data.
7. Connect the device to a computer with a USB cable; the device is recognised as a USB drive — open the Multimeter folder to access the measurement data.

5.2 Screenshots

1. Long-press SAVE to save a screenshot of the screen (bmp format).
2. Open the screenshot menu in the settings to browse the saved pictures.
3. Connect the device to a computer with a USB cable and open the USB drive to access the saved pictures.

5.3 System settings

1. Long-press MENU to enter or exit the settings menu.
2. In the settings menu, press any power-supply key to return to the power-supply screen, or any multimeter key to return to the multimeter screen.
3. Short-press MENU to switch between options and modify digits.
4. Rotate the encoder knob to move the cursor and increase or decrease values.

Category	Item	Range
Power	OVP	0–36.99 V
Power	OVP alarm	0.00%–1.00%
Power	OCP	0–5.100 A
Power	OCP alarm	0.00%–1.00%
Power	OPP	0–180.99 W
Power	LVP	8–36 V

Category	Item	Range
Power	OTP	0–99 °C
Power	Input source	AUTO, DC, PD, BAT
Power	Soft start	Slow, medium, fast
System	Language	Chinese, English
System	Brightness	Low–high
System	Sound	Off, on
System	Metering	Off, on
System	Format	No, yes
System	Factory reset	No, yes
System	Sleep	Never, 10 / 30 / 60 / 120 / 180 min
Screenshots	File count	Browse saved pictures
Records	Record count	View protection records
About	Device info	Shows device information; device address can be set

6 PC software and Bluetooth

6.1 Connecting to the host software

Install the power-supply host application on the computer before connecting, then open its operating interface.

Basic operation

1. Connect the device to the computer with a USB cable.
2. Set the communication port, baud rate and device address, then click Connect.

3. After a successful connection the interface reads the power-supply parameters automatically.
4. Click the power button to start the output.
5. Click the multimeter button to switch measurement functions.
6. Click the preset data to set the group values.
7. Click Parameter settings to configure protection, voltage and current values.

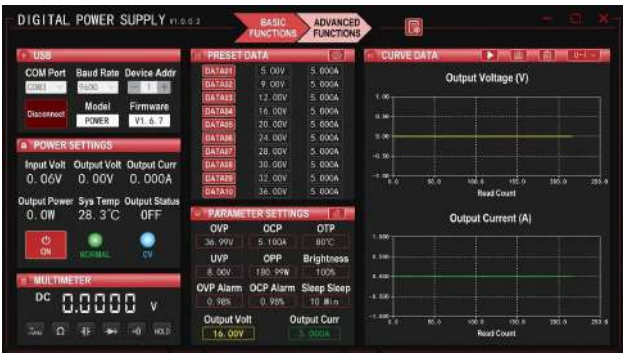


Fig. 8 PC software main window

Curve data

1. Click the record button to start recording data.
2. Click the export button to export data.
3. Click the refresh button to refresh data.
4. Click the type button to select the data type to display: U-I, U-P, P-I, U-M.
5. Inside the waveform panel: hold the right mouse button and move left / right to scroll the records; roll the wheel to compress or expand the time scale.

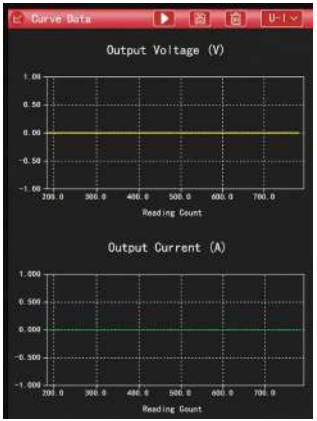


Fig. 9 Curve-data window

Advanced functions

- Metering: press the metering button to enable it; output capacity and energy are calculated automatically over time.
- Voltage sweep: set the sweep parameters and press Run to start the voltage-sweep output mode.
- Current sweep: set the sweep parameters and press Run to start the current-sweep output mode.



Fig. 10 Advanced-function panels

6.2 Bluetooth connection

Install the “Bluetooth DMM V2” app on the phone before connecting.

1. Turn on Bluetooth, open the app and start scanning for devices.
2. When the scan succeeds, the POWER-APP device name appears; tap it to open.
3. Once connected automatically, the phone communicates with the device; the power supply can be operated and data, settings and saved data can be viewed from the phone.

6.3 Firmware upgrade

1. Switch the device on and connect it to a computer with a USB cable.
2. Copy the firmware file to the root directory of the internal USB drive.
3. Restart the device — the upgrade completes automatically.

4. Alternatively, with the device off, long-press MENU and press the power key to enter USB-drive mode; copy the firmware file, then short-press MENU to start the upgrade.

7 Specifications

7.1 General specifications

Item	Specification
Display	2.8-inch IPS
Ranging	Auto
Sample rate	3 samples/s
True RMS	Yes
Data hold	Yes
Backlight	Yes
Low battery indication	Yes
Auto power off	Yes

7.2 Mechanical and environmental specifications

Item	Specification
Material	ABS + aluminium alloy
Dimensions	197 × 110 × 77 mm
Weight	Approx. 809 g (excluding batteries)
Battery	18650 lithium cells × 4 (not included)
Warranty	One year
Operating environment	0–40 °C · < 75% RH
Storage environment	−20–60 °C · < 80% RH

7.3 Multimeter specifications

Accuracy is specified at an ambient temperature of 25 °C.

Function	Range	Resolution	Accuracy
DC voltage	2.5000 V	0.0001 V	±(0.05% + 3)
	25.000 V	0.001 V	±(0.05% + 3)
	250.00 V	0.01 V	±(0.05% + 3)
	1000.0 V	0.1 V	±(0.05% + 3)
DC voltage (mV)	25.000 mV	0.001 mV	±(0.5% + 3)
	250.00 mV	0.01 mV	±(0.5% + 3)
AC voltage	2.5000 V	0.0001 V	±(0.5% + 3)
	25.000 V	0.001 V	±(0.5% + 3)
	250.00 V	0.01 V	±(0.5% + 3)
	750.0 V	0.1 V	±(0.5% + 3)
AC voltage (mV)	25.000 mV	0.001 mV	±(0.8% + 3)
	250.00 mV	0.01 mV	±(0.8% + 3)

AC voltage frequency response: 40 Hz–1 kHz.

Function	Range	Resolution	Accuracy
Resistance	250.00 Ω	0.01 Ω	±(0.5% + 3)
	2.5000 kΩ	0.0001 kΩ	±(0.2% + 3)
	25.000 kΩ	0.001 kΩ	±(0.2% + 3)
	250.00 kΩ	0.01 kΩ	±(0.2% + 3)
	2.5000 MΩ	0.0001 MΩ	±(1% + 3)
	25.00 MΩ	0.01 MΩ	±(1% + 3)
	250.0 MΩ	0.1 MΩ	±(5.0% + 5)
Capacitance	9.999 nF	0.001 nF	±(5.0% + 20)
	99.99 nF	0.01 nF	±(2.0% + 5)
	999.9 nF	0.1 nF	±(2.0% + 5)

Function	Range	Resolution	Accuracy
	9.999 µF	0.001 µF	±(2.0% + 5)
	99.99 µF	0.01 µF	±(2.0% + 5)
	999.9 µF	0.1 µF	±(2.0% + 5)
	9.999 mF	0.001 mF	±(5.0% + 5)
	99.99 mF	0.01 mF	±(5.0% + 5)
Frequency	9.999 Hz	0.001 Hz	±(2.0% + 2)
	99.99 Hz	0.01 Hz	±(0.1% + 2)
	999.9 Hz	0.1 Hz	±(0.1% + 2)
	9.999 kHz	0.001 kHz	±(0.1% + 2)
	99.99 kHz	0.01 kHz	±(0.1% + 2)
	999.9 kHz	0.1 kHz	±(0.1% + 2)
Diode	Yes		
Continuity	Yes		

7.4 Power-supply specifications

Item	Specification
Input voltage	DC 9–36 V, current 100 mA–5 A
Input modes	DC input, PD protocol input, battery input
Output	Voltage DC 0–36 V · current 0–5 A · power 0–180 W
Setting resolution	Voltage 0.01 V · current 0.001 A
Setting accuracy	Voltage ≤ 0.1% ±5 mV · current ≤ 0.3% ±5 mA
Readback accuracy	Input voltage ≤ 0.2% ±5 mV · output voltage ≤ 0.2% ±10 mV · output current ≤ 0.2% ±5 mA

Item	Specification
Full-load efficiency	87%
Protections	OVP / OCP / LVP / OPP / OTP / input reverse-polarity / output reverse-current / excess input power

7.5 Standard accessories

Check the accessories against the table below after unpacking; contact your dealer promptly if anything is missing or damaged.

No.	Accessory	Qty
1	IPS3005 programmable DC power supply	1
2	USB-C charging cable	1
3	USB data cable (PC software / data export)	1
4	Red & black multimeter test leads	1
5	Banana-plug power output leads	1
6	User manual	1

8 Maintenance and warranty

8.1 Maintenance

- Servicing: inspect the appearance and functions of the device regularly and contact the service department in case of any abnormality. Personnel without calibration and repair qualifications must not disassemble the device or modify its internal circuits.
- Cleaning: wipe the case with a slightly damp, soft cloth and a neutral detergent; never use alcohol, acetone or other corrosive solvents. Dust or moisture on the input and measurement ports reduces accuracy — clean them regularly.

- Before cleaning: switch the device off and disconnect all input and output wiring.

8.2 Warranty

The device is warranted for one year from the date of purchase. The warranty does not cover normal wear of accessories; damage caused by accidental impact, negligence, misuse, unauthorised modification, dust or liquid contamination, or operation outside the specified conditions is not covered.

To improve the product continuously, the manufacturer reserves the right to change specifications and technical parameters without prior notice.

9 Compliance

9.1 Waste disposal and environmental protection (WEEE)

- This product is subject to the EU WEEE (Waste Electrical and Electronic Equipment) directive. At the end of its life it must be collected separately and taken to an approved recycling facility — **do not dispose of it with household waste**.
- Remove the built-in lithium batteries and dispose of them in accordance with local regulations; never incinerate them.

9.2 CE conformity

This product complies with the applicable EU directives and bears the CE marking; it contains a Bluetooth radio module and complies with the relevant requirements of the Radio Equipment Directive (RED) 2014/53/EU.

Notes

For calibration dates, test results and service history. Version V1.0