

Electrophoresis Power Supply

Instruction Manual

Version 2.1



BPS300, HCPS3000, BPS500

Introduction

The Electrophoresis Power Supply is an instrument that delivers a regulated electrical current to the electrophoresis cell during a gel electrophoresis experiment. The product consists of the main power supply unit and a power cord. The Electrophoresis Power Supply utilizes microcomputer and switch technology to ensure precise control of output parameters. Main features include time-fixed or manual operation, stable voltage output, short circuit protection, and load-oriented voltage output. It is suitable for both nucleic acid and protein gel electrophoresis.

Product Details

The Electrophoresis Power Supply has the following features:

- Programmable one- or two-step methods
- Flexible configuration between constant voltage output, constant current output, and constant power output
- Time-set function, allowing for timed operation or manual start/stop
- Automatic switching between constant voltage and constant current in case of exceeding set value
- Automatic non-load detection
- Automatic short circuit protection
- Automatic recording of previous 10 settings
- 192 × 64 LCD screen
- Skid-resistance for instrument stability
- Four output terminals

Parameters

Output parameters

- Four output sockets with 3.5mm diameter
- Output voltage ripple is less than 1%
- Output voltage drift is less than 1% (10 minutes after starting the main body)
- Output voltage regulation factor is less than 1%

Specifications

Feature	Basic BPS300	High-Current HCPS3000	Universal BPS500
Output Voltage	5-300 V	5-250 V	5-500 V
Output Current	1-400 mA	10-3000 mA	10-2500 mA
Output Power	1-75 W	1-300 W	1-500 W
Type of output	Constant voltage, constant current, or constant power		
Timer	1 min–99 hr, 59 min; 1 min resolution		
Resolution	1 V / 1 mA / 1 W	1 V / 10 mA / 1 W	1 V / 10 mA / 1 W
Pause/resume function	✓	✓	✓
Protein function	✓	✓	✓
Input	98-242V AC/50-60Hz		
Fuse	3A / 250V AC		
Dimensions	300 x 240 x 100 mm		
Weight	2.1 kg	2.5 kg	2.6 kg

Safety protection measures

- Non-load and sudden load change detection
- Short circuit and over-load protection
- Overvoltage detection
- Arc detection
- Ground leak protection

Working environment

- Temperature: 0 —40 °C
- Humidity: 0 —90 %

Instrument Controls

The Electrophoresis Power Supply is equipped with five buttons: two left/right keys (◀▶), two up/down keys (▲▼), and a start/stop key (⏮⏭).

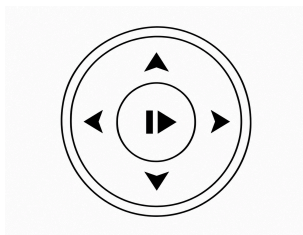


Figure 1 Operation Buttons

- Left/Right Keys: Switch between menu selections.
- Up/Down Keys: Adjust the selected data.
- Start/Stop Key: Execute or pause the run.

Display

The Electrophoresis Power Supply displays the voltage, current, and power simultaneously for monitoring in real-time. The panel on the right side displays the menu options.



Figure 2 Home Page

The following indicators appear in case of default:

- “NO LOAD” indicates no connection to the load.
- “SHORT ” indicates a short circuit.

Operation Instructions

Constant Voltage, Current, or Power Mode (One-Step Electrophoresis)

1. After powering on, the instrument directly enters the main interface. Press the ▶ key to edit the run parameters.
2. Constant voltage output:

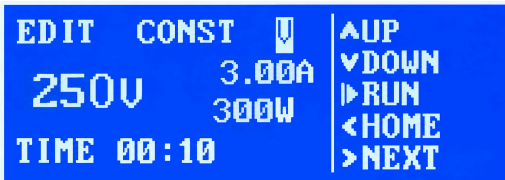


Figure 3 Constant Voltage

- a. To edit the constant value, press the ▲▼ keys. Switch the power supply constant value to **V** for voltage.

- b. With **V** selected, press the **▶** key to move the cursor and highlight the voltage value, and press the **▲▼** keys to adjust the specific value of constant voltage.
 - c. Press the **▶** key to move the cursor and highlight the time, then press the **▲▼** keys to set the time.
 - d. Press the **▶▶** key to start the run.
 - e. During a run, press the **▲** key to check the settings, **▶▶** to pause, **◀** to stop the run, and **▶** to edit the settings.
3. Output of constant current and constant power:

Repeat the steps outlined above, except that the constant value will be set to **A** for current or **P** for power.

Protein Mode (Two-Step Electrophoresis)

Protein mode is a frequently used function when running protein electrophoresis, which allows for different time and voltage / current / power values to be set for stacking gel and resolving gel. Set the parameters for step 1 on the left, followed by the parameters for step 2 on the right. Press the **▶▶** key to start the run. The instrument will automatically run step 1 followed by step 2.

1.	150V	2.	110V
CONST	3.00A	CONST	3.00A
V	00:25	V	00:01
▲MUTE	▶▶RUN	◀HOME	▶EDIT

Figure 4 Protein Mode

End of Electrophoresis Run

If time-fixed output is selected, the power supply will stop output when the operation is finished, and a buzzer will sound. Press the **▲** key to mute the buzzer. If more time is needed, press **▶▶** to continue operation at the previously set value.

View Records

Press ▼ on the home screen to enter the history page, then press the ▲ ▼ keys to scroll through the records. Press ► to operate according to the selected record.



Figure 5 History

Safety Warnings

YamayBio instruments are designed for safe and reliable operation. However, improper use or mishandling may cause instrument damage or pose a risk to user safety. Use the instrument in accordance with this manual and established laboratory safety procedures. If any issues arise, contact YamayBio for assistance.

- Do not disassemble the instrument or touch internal components.
- Do not touch any part of the instrument outlet during operation.
- Power off the electrophoresis power supply when adjusting the electrophoresis cell.
- Do not take out or insert the wire during operation in order to avoid damage to instrument components.



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