

Electrophoresis Power Supply EPS 301



User Manual

Manuel d'Utilization

Bedienungsanleitung

Manual del usuario

Manuale dell'operatore

18-1130-18

Edition AA

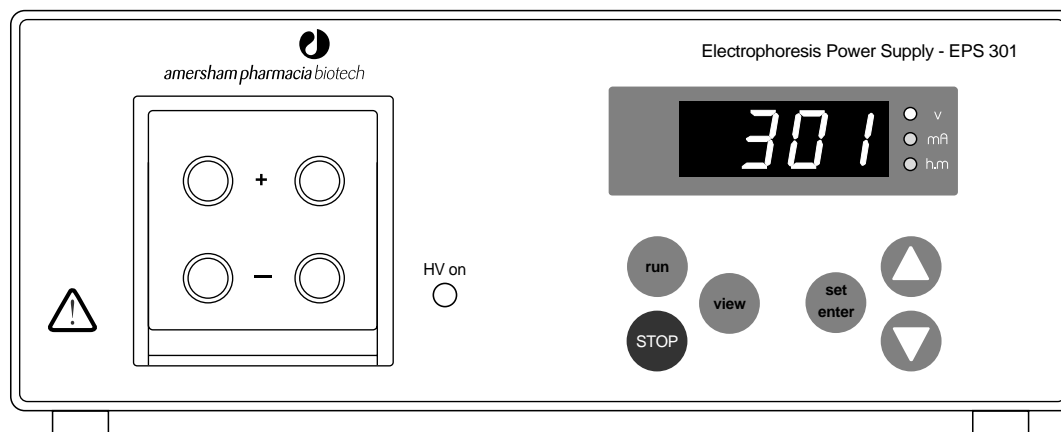


Fig. 1. The front panel of the EPS 301.

Figure 1. Le panneau avant de l'EPS 301.

Abb. 1. Die Fronttafel des EPS 301.

Figura 1. Panel frontal de la EPS 301.

Figura 1. Pannello anteriore dell'EPS 301.

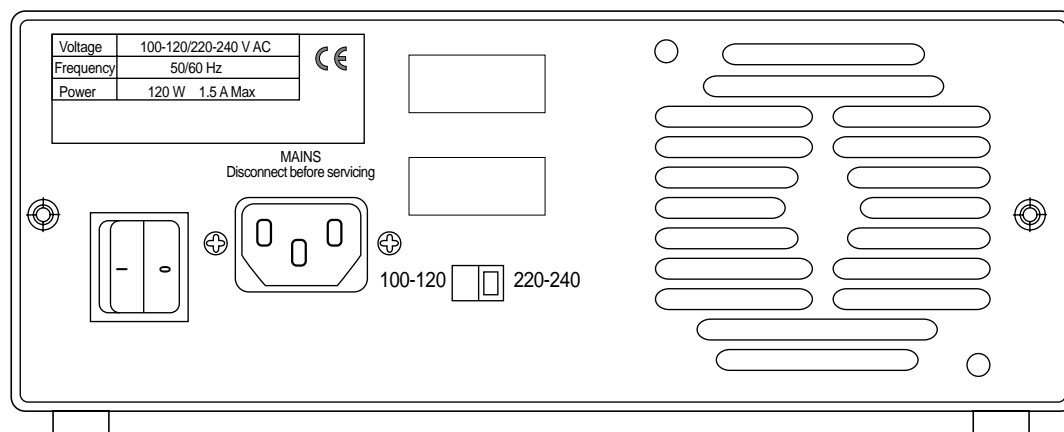


Fig. 2. The rear panel of the EPS 301.

Figure 2. Le panneau arrière de l'EPS 301.

Abb. 2. Die Rückwand des EPS 301.

Figura 2. Panel posterior de la EPS 301.

Figura 2. Pannello posteriore dell'EPS 301.

3. Unpacking and installation

Unpacking

Check the contents against the packing list supplied. Inspect for any damage that may have occurred during transit. Report any damage immediately to your local Amersham Biosciences representative and to the transport company concerned.

Mains connection

Select the appropriate voltage range, 100-120 or 220-240 V. See Fig. 2 inside front cover.



Warning! If the power supply is connected to 220-240 V with the range set to 100-120 V, the instrument can be severely damaged.

Select the appropriate mains cable and connect one end to the mains socket on the EPS 301 power supply, see Fig. 2 inside front cover, and the other end to an AC grounded outlet.

Switch on the power. Each time the instrument is turned on a self diagnostic test is done. If an error is detected during the test a message will appear on the display and an alarm will sound.

Connection of the electrophoresis unit(s)

Connect the leads from the electrophoresis unit (red to red, and black or blue to blue). The red lead is the positive and black or blue is the negative.



Warning! Use only undamaged electrical cables and equipment approved for the voltage you will use. High voltage electrical cables should be in accordance with IEC 1010-2-031:1993. All equipment connected to high voltage electrical cables should be in accordance with IEC 1010-1:1993.

Local regulation for Great Britain

IMPORTANT WARNING

This appliance must be earthed.

The wires in the mains lead are coloured in accordance with the following code:

Green and yellow	Earth
Blue	Neutral
Brown	Live

If the plug provided is unsuitable for your socket outlets, the plug must be cut off and a suitable plug fitted. The cut-off plug should be disposed of and must not be inserted into any socket as this can result in electric shock. The plug or adapter or the distribution panel should be provided with a 13 amp fuse. As the colours of the wires in the mains lead of this appliance may not correspond with coloured markings identifying the terminals in your plug, proceed as follows:

The green and yellow wire must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol, or coloured green, or green and yellow.

The blue wire must be connected to the terminal which is marked with the letter N or coloured black.

The brown wire must be connected to the terminal which is marked with the letter L or coloured red.

NOTE After replacing or changing a fuse, the fuse cover in the plug must be replaced with a fuse cover which corresponds to the colour of the insert in the base of the plug or the word that is embossed on the base of the plug, and the appliance must not be used without a fuse cover.

Only 13 Amp fuses approved to B.S. 1362 A.S.T.A. should be used.

4. Technical description

4.1 Materials

The main components in the EPS 301 power supply are made of the following materials.

Instrument box	Aluminium
Display holder	Polypropene (PP). UL94V0
Keyboard	Polyester
Output sockets	Acetalplastic (POM). UL94V0
Rubber feet	Polyurethane

4.2 Front panel

On the front panel there is a numerical display illustrated with the symbols, V, mA, and h.m., a keyboard with six membrane keys, a light emitting diode that lights when voltage is applied (HV on) and output sockets for two electrophoresis units.

4.3 Display

A four digit numeric display guides you through the programming, shows actual parameter values during the electrophoresis and final parameter values afterwards. It also shows error messages.

Figure 1, inside front cover, shows the display in the End position when power is switched on.

4.4 Keyboards



SET/ENTER

Puts the instrument into its program mode. Pressing SET/ENTER in the program mode enters a value, if valid, and moves the program to the next parameter.

In the RUN mode, pressing SET/ENTER allows you to make changes in the program during a run.

Valid values are: voltage 5-300 V, current 10-400 mA, time 0.01-23.59 h, or timer off - - - -.



UP/DOWN

Changes the parameter value V, mA, and h.m. when the display is flashing. Numerical values are changed in an accelerating manner when the key is held down. Clicking ↓/↑ changes the value in pre-set increments. The values will automatically change from maximum to minimum value or vice versa, except for the time (h.m.) where the signs - - - - are placed between the minimum and maximum values indicating that the timer is switched off.



RUN

Starts the run and puts the program into RUN mode. The light (HV on) is switched on.



VIEW

In run mode, VIEW switches between the actual values for voltage, current and elapsed time. Pressing VIEW for more than three seconds starts automatic switching between the actual values for voltage, current and elapsed time. This automatic switching is stopped by pressing VIEW or RUN.

In End mode, VIEW switches between the end parameter values.



STOP

Stops the run and puts the instrument in End mode. The voltage and the light (HV on) are switched off. By pressing VIEW the end parameter values are displayed.

4.5 Output sockets

There are two sets of output sockets connected in parallel to allow two electrophoresis units to be connected and run at the same time, see Fig. 1 inside front cover.

4.6 Rear panel

The rear panel is shown in Fig. 2, see inside front cover. On the rear panel there is:

1. A mains switch. Press in I to switch on the power to the power supply. Press 0 to switch off the power.
2. A socket for the mains cable.
3. A switch for voltage range. The left position corresponds to 100–120 V and the right to 220–240 V.
4. Vents.

5. Operation

5.1 Connecting the electrophoresis unit(s)

Connect the leads from the electrophoresis unit (red to red, and black or blue to blue). Red is positive and black or blue negative. Two electrophoresis units can be run at the same voltage simultaneously. When two electrophoresis units are run at the same time, double the current. Voltage will be the same whether one or two units are run.

5.2 Programming

Programming

Enter the program mode by pressing SET/ENTER. When the display is flashing and one of the parameters V, mA or h.m. is lit, the program is ready for setting the values by using the ↓/↑ buttons. Confirm and go to the next parameter by pressing SET/ENTER.

Pressing STOP in program mode saves the displayed value and puts the program in End mode. When the EPS 301 power supply is switched on, the programmed values from the last run can be used directly by pressing run.

Set limits for voltage, current and time

The flashing display and the lighted symbol V indicates that the voltage limit can be set. Using the ↓/↑ buttons, select the maximum voltage desired for the run. Confirm with SET/ENTER. Repeat the same procedure to set current and time limits. If no time limit is used, switch the timer off by setting the time to zero. This is indicated by - - - -. Confirm with SET/ENTER. Programmable values are: voltage, 5-300 V, current, 10-400 mA, time, 0.01-23.59 h or timer off (- - -).

Alarm

When the programmed time has elapsed, the program will enter the End mode and the alarm will sound. You can stop the alarm by pressing any key. The timer and alarm are switched off by adjusting the time to zero.

5.3 Running

Run

Press RUN to start the electrophoresis. A light emitting diode shows when voltage is applied (HV on). The display will show one of the actual values. If no current is displayed, please check the electrical connections to the electrophoresis equipment.

View actual values

Press VIEW in Run mode to change between the actual values for voltage, current or elapsed time. Press VIEW for more than three seconds to switch automatically between these values. Stop the automatic switching by pressing VIEW or RUN.

View programmed values

Press SET/ENTER to view the programmed values during a run. If the keyboard is idle for 4 seconds or you press RUN the display goes back to the actual values.

Change parameters during a run

When the method is running, changes can be introduced in the program by pressing SET/ENTER and using ↓/↑. Confirm by pressing SET/ENTER or RUN

Stop the run

When the programmed time has elapsed, the program will enter the End mode and the alarm will sound. You can stop the alarm by pressing any key. It is also possible to break the run manually by pressing STOP. In both cases, the values for voltage and current will go to zero, as indicated by the light emitting diode switching off.

View end parameter values

Display the end parameter values by pressing VIEW.

Post electrophoresis

Disconnect the leads and proceed with post-electrophoretic techniques. Since the quality of your separation will deteriorate due to diffusion, you should remove the gel and begin staining or blotting immediately.

5.4 Short instructions

This section summarises the main points covered earlier in this chapter. Use it as a check list once you are familiar with the detailed programming and running instructions. Refer also to the separate short instruction EPS 301 included with the power supply. We recommend you keep this separate short instruction close by the instrument.

1. Turn mains power ON. The program enters the End mode. If the programmed values from the last run are to be used again, go to point 4 below. To change the program, press SET/ENTER to enter the program mode. The voltage symbol V is lit and the value for voltage flashes. The programmed value from the last run is displayed. Use ↓/↑ to set to the desired voltage. Press SET/ENTER to confirm. If the voltage value is correct from the beginning just press SET/ENTER to confirm.
2. The display shows the last programmed value for current flashing. Press ↓/↑ until the desired value is reached. Confirm by pressing SET/ENTER.
3. The value for time is now flashing. Use ↓/↑ to set the time. To switch off the timer, set the time to zero. Indicated by - - - -. Confirm by pressing SET/ENTER.
4. When programming is completed, connect your electrophoresis unit to the output(s), and press RUN.
5. Press VIEW to display actual voltage, current and elapsed time. Press VIEW for more than three seconds to start automatic switching of actual values.
6. Press SET/ENTER during the run to check the programmed parameters and change the values by pressing ↓/↑. Confirm by SET/ENTER.
7. The program stops automatically on completion or on STOP being pressed.
8. Press VIEW after the run to check the end parameters.

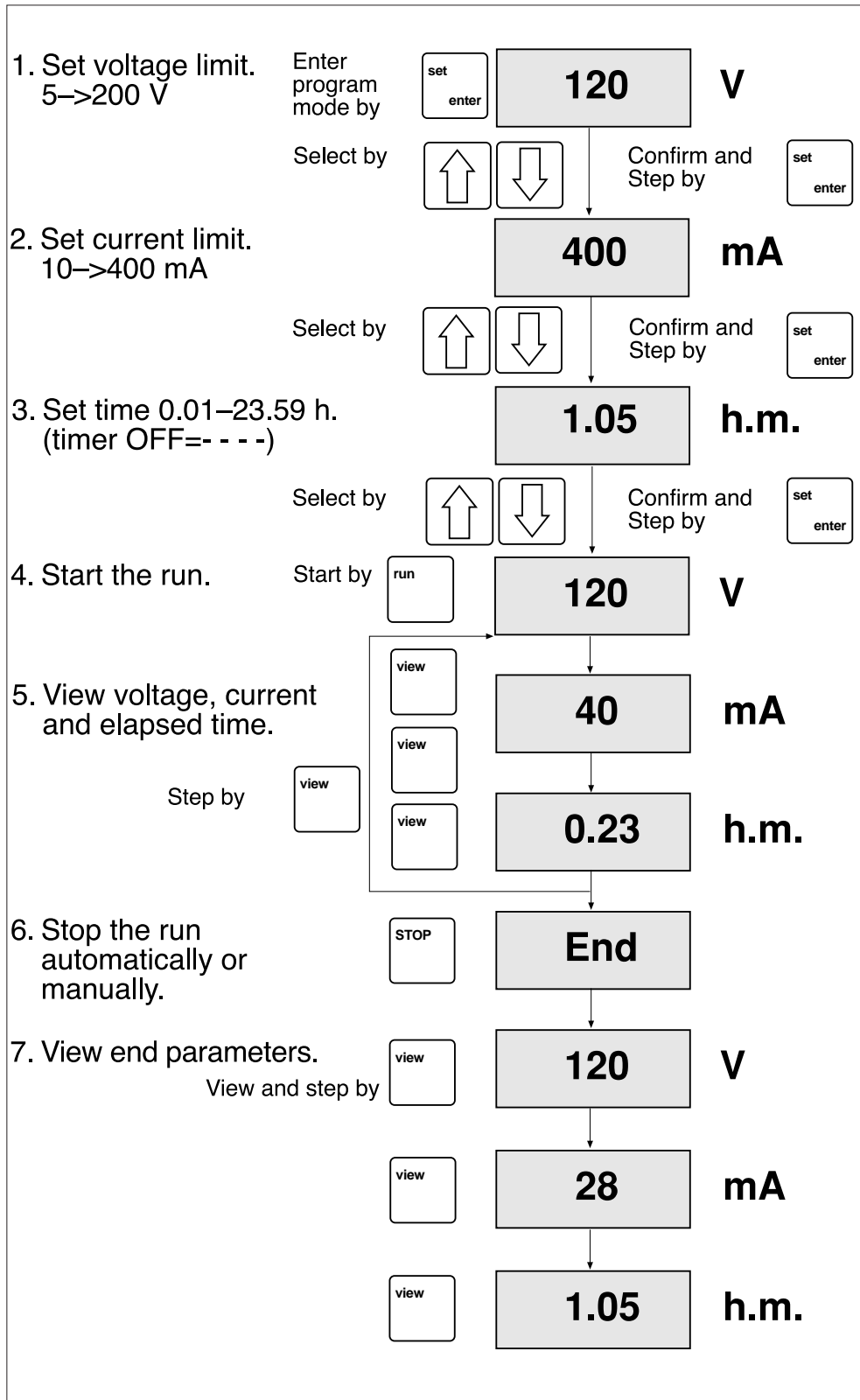


Fig. 3. Step-by-step summary of programming and running.

6. Maintenance

Wipe the instrument regularly with a damp cloth. Let the instrument dry completely before use. All servicing should be entrusted to qualified personnel only. Please contact your local Amersham Biosciences representative for more service information.

7. Trouble shooting

If an error occurs, either during a run or when switching on the power supply, the output is switched off if necessary and an error message will be displayed. The following messages can be displayed.

-PF-

Mains power failure

The program continues when power is resumed. The display switches between PF and the actual parameter value. The message -PF- is removed by pressing any key. No special action is needed.

FAIL

Serious error

If a serious error occurs, the program enters the FAIL mode. The output is switched off and FAIL is shown in the display.

Please contact your Amersham Biosciences representative.

8. Technical specifications

Regulation	Maximum voltage and current with automatic cross-over at preset limits
Output mode	Contante Voltage: 0-300 V DC, Contante Current: 0-400 mA
Maximum Power Output	80 W
Programming range	Voltage: 5-300 V DC Current: 10-400 mA Time: 00.01-23.59 h or off (- - -)
Output resolution	Voltage: 1 V Current: 1 mA
Programming resolution	Voltage: 1 V Current: 1 mA Time: 1 min
Accuracy	Voltage: 4%, ± 2 V Current: 4%, ± 4 mA Timer: 0.1% ± 1 min
Line regulation	< 0.5%
Load regulation	< 1% at load change 10-90% of maximum load
Ripple	< 3% at 300 V
Short term stability	< 0.2% /10 h after warm up
Long term stability	< 1% /year
Output protection	Fully protected against any overload conditions
Recovery after power failure	The program continues automatically
Ambient operating temperature	4-40 °C
Ambient operating humidity	0-95%
Ambient operating pressure	68-106 kPa, maximum altitude of 2000 m
Mains requirements	100-120 V/220-240 V; 50/60 Hz
Power consumption	Max 120 W
Dimensions (WxDxH)	250 x 215 x 95 mm
Weight	3.0 kg

9. Ordering information

Designation	Code No.
Electrophoresis Power Supply - EPS 301	18-1130-01