VACUTEC

BG-Power Supply

Installation and Operation Manual

BG-Power300
BG-Power600
BG-Power600i

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VACUTEC

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Safety

Extreme caution should be exercised in the operation of this instrument as it can produce sufficient voltage and current to cause a lethal shock.

To avoid any risk of injury, the instrument should only be operated by properly trained personnel and always in accordance with the instructions provided.

Read this entire manual before using this power supply.

1. This instrument is for laboratory use only.
2. The instrument must always be used with the protective earth lead of the power cord correctly grounded to earth at the mains outlet.
3. To permit sufficient, be sure that there is at least 6cm clearance around the power supply. Do not block the fan vents at the rear of the unit.
4. Do not operate the power supply in extreme humidity (>95%) or where condensation can short the internal electrical circuits of the power supply.
5. Keep the instrument as dry and clean as possible. Wipe regularly with a soft damp cloth. Let the power supply dry completely before use. Always unplug the power supply while cleaning it and until it is dry.
6. When taking the power supply into a cold room, the unit can be operated immediately. However, when removing the power supply from the cold room, let the unit equilibrate to room temperature for a minimum of 2 hours before using it.

Note that the output is connected to the chassis/reference earth.

Section 1 Introduction

1.1 Overview

BG-Power Supply is a high quality, high precision and safe power supply for electrophoresis applications that require a maximum voltage of 300 - 600 V. Electrophoresis separations can be controlled by voltage, current or power.

BG-Power Supply is primarily designed for the following speciality:

1. Easy to read digital display
2. Timed or continuous runs, with end-of-run alarm, if desired.
3. Automatic parameter limit crossover to prevent overheating and protect experiments and equipment.
4. Membrane keypads for easy programming
5. Four pairs of power outlets for duplicate parallel runs
6. Constant voltage, constant current and constant power modes.
7. Single-unit increments in settings and read-outs for precision and reproducibility.
8. Stores and recalls twelve protocols
9. Suitable for general applications, including mini and standard sized vertical gel and many blotting applications.

1.2 Delivery Package

When you receive the power supply, carefully inspect the container for any damage which may have occurred in shipping. Severe damage to the container may indicate damage to the power supply itself. If you suspect damage to the unit, Please contact Vacutec immediately

Contents include:

- BG-Power Supply
- Power Cord
- User Manual

If any part is missing or damaged, contact Vacutec immediately.

Section 2 Technical Description

2.1 Front Panel

The front panel consists of a Liquid Crystal Display (LCD), a keyboard with 8 membrane keys, a Light Emitting Diode (LED) that lights when voltage is applied (HV on) and connectors for electrophoresis units (see Diagram 1)

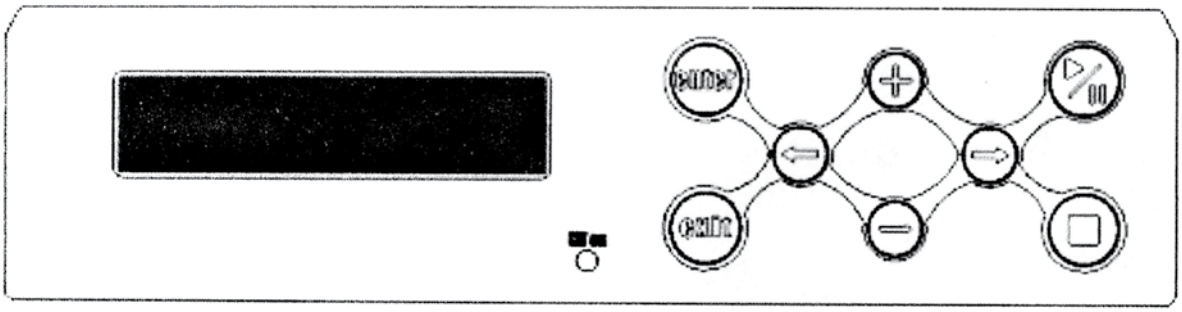


Diagram 1

2.2 Rear Panel

The rear panel is shown in Diagram 2 below. 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 100-120V and the right to 200-240V
4. Vent openings.

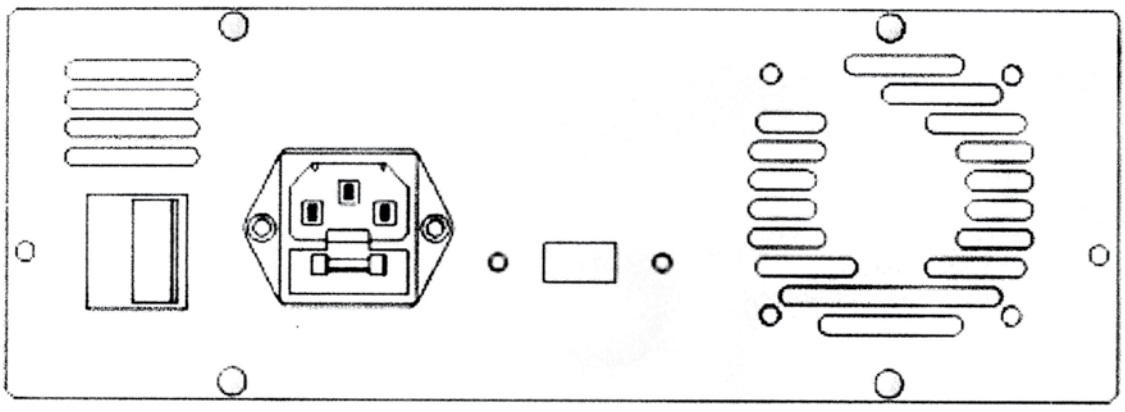


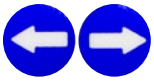
Diagram 2

2.3 Keyboard

ENTER KEY

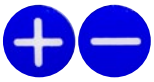
Enters a mode, locks the value if correct and moves programming to the next field

SWITCH KEY



Switch the place of the cursor and view the settings during a run.

SCROLL KEY

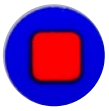


Changes the value or other choice in the field of the selected parameter.

RUN / PAUSE KEY

Pressing this key starts the run and puts the program into RUN mode when the instrument is out of run. The program number, current values for voltage, current and power are shown on the display. The countdown time is also displayed. Pressing this key, while in RUN mode, puts the instrument in PAUSE mode and switches off the voltage. The display shows the status of the run at the time the key was pressed.

STOP KEY



Stops the run and puts the instrument into END mode. The voltage is switched off and the end parameters are displayed.

EXIT KEY

Goes back to the previous display.

2.4 Output Sockets

There are four sets of output sockets to allow four electrophoresis units to be connected and run at the same time. The voltage output is 0-600V for BG-Power600 and BG-Power600i, 0-300V for BG-Power300.

Section 3 Operation

3.1 Programming

The Programming procedure can be followed step by step in the quick reference diagram 3 on page 6

Start Position
When the power supply is switched on, the display shows the start mode with a cursor below the selected menu.
For example:

> **1. Quick Start**
> **2. Programming**

If the power supply is switched on for the first time, the values of program voltage, current and power are 000V, the maximum current and power respectively.

Choosing a mode
Use SWITCH KEYS to choose 1 or 2 and press ENTER KEY to confirm a mode shown on the display.

3.1.1 Quick Start

Setting voltage, current or power limits
The display will now display the default “SET: V” screen (for voltage adjustment). Use the SCROLL KEYS to move the cursor to the required field, then adjust the digits using the SWITCH KEYS. Confirm with the ENTER KEY. Repeat above procedures for the current and power priority modes. Each priority mode allows specific adjustment of either voltage, current or power, as each is set the program will automatically calculate the resulting voltage, current or power for your selection.

Setting time limit
The default time is 999 minutes. To change the time limit, switch to the required digit using the SWITCH KEYS and select the desired values with the SCROLL KEYS. Press ENTER KEY to store settings. Press RUN/PAUSE KEY to run.

3.1.2 Program

Saving a program
Choose a blank program and set the voltage, current or power limit as described above. Press ENTER KEY to store program setting. Press RUN/PAUSE KEY to run. The parameters can also be changed using the procedures described above, and the changes will be saved to the program.

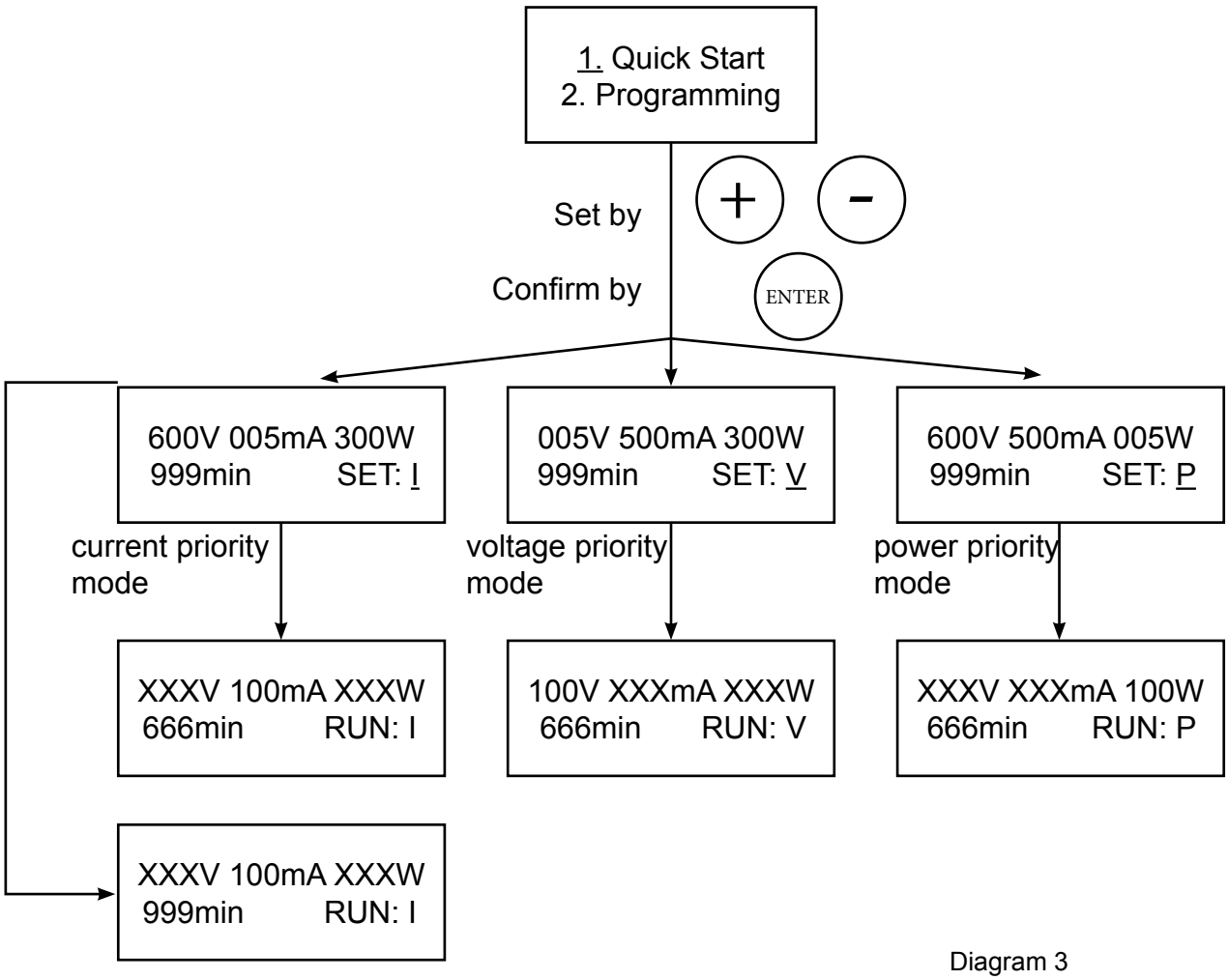


Diagram 3
Programming Procedure

3.2 Running a Program

Connect the leads from the electrophoresis unit (Red to Red and Black to Black). Red is positive and Black is negative. Up to four electrophoresis units can run at the same voltage at one time.

NOTE: The maximum voltage, current and power load between the four electrophoresis units cannot exceed the Rated voltage, current and power of the power supply.
Example: four units cannot run at 100V each on a 300V power supply, the maximum voltage between the four units will be 75V each.

Choosing a mode
Press the SWITCH KEY to select 1 or 2 with the cursor and confirm your choice with the ENTER KEY. (Omit this step if you have already set a program as described in section 3.1)

Running
Press RUN KEY to start the electrophoresis. The display will show current values for voltage, current, power and elapsed time or volt hours. The “HV on” LED shows when voltage is applied. If no current is displayed, check the electrical connections to the electrophoresis equipment.

Pausing
You can interrupt the electrophoresis for sample loading and/or changing parameter values by pressing the PAUSE KEY. Once voltage and current are no longer be supplied, the “HV on” LED will switch off and you may then safely load your samples. The display will show the status of the run sequence at the time the PAUSE KEY was pressed. When sample loading is complete, press the RUN KEY again and the run will continue from the last state prior to the interruption.

View programmed values
It is possible to view the programmed values during a run by pressing the SWITCH KEY. **NOTE: Values cannot be changed here.** The display returns automatically to show the current run values after 5 seconds.

Stopping the run and viewing end parameter values
When the programmed time limit is reached, the program will enter the end mode. It is possible to interrupt the run manually by pressing the STOP KEY. In both cases, the “HV on” switches off. The end parameter values are displayed and an alarm will sound. Stop the alarm by pressing any KEY.

A run cannot be continued after pressing the STOP KEY. You can restart the program by pressing the RUN KEY.

Disconnect the leads and proceed with post-electrophoretic techniques. Since diffusion will begin as soon as the voltage is turned off, you should remove the gel and begin staining, blotting or autoradiography immediately.

Section 4 Maintenance

Wipe the instrument regularly with a damp cloth. Let the instrument dry completely before use. No further user maintenance is required.
Should you encounter any malfunction, please contact Vacutec for further service information.

Section 5 Trouble Shooting

Error	Cause	Solution
ERROR CODE:XX CHECK THE LOAD	The current is less than the lower limit. This can be due to incorrect connection of the electrophoresis equipment or due to use of buffers with extremely low conductivity.	Check connections and/or buffers
ERROR CODE:XX GROUND LEAKAGE	The current to ground leakage in the electrophoresis unit is too high.	Check the electrophoresis unit
ERROR CODE:XX POWER FAIL	The mains voltage is out of the range.	1. Check voltage selector 2. Check mains voltage
ERROR CODE:XX CALL SERVICE	If a serious error occurs, the program enters the FAIL mode. The output is switched off and an error message is shown in the display.	Record the error code number and contact Vacutec.

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Turn the Power supply on.
A cursor will appear below the selected menu (use the left & right arrow keys to change selection)
Press the Enter key to select the desired menu.

1. Quick Start Menu

Setting voltage, current or power limits

The display will now display the default “SET: V” screen (for voltage adjustment). Use the “SCROLL” keys (Left & right arrows) to move the cursor to the required field, then adjust the digits using the “SWITCH” keys (+-). Confirm with the “ENTER” key. Repeat above procedures for the current and power priority modes. Each priority mode allows specific adjustment of either voltage, current or power, as each is set the program will automatically calculate the resulting voltage, current or power for your selection.

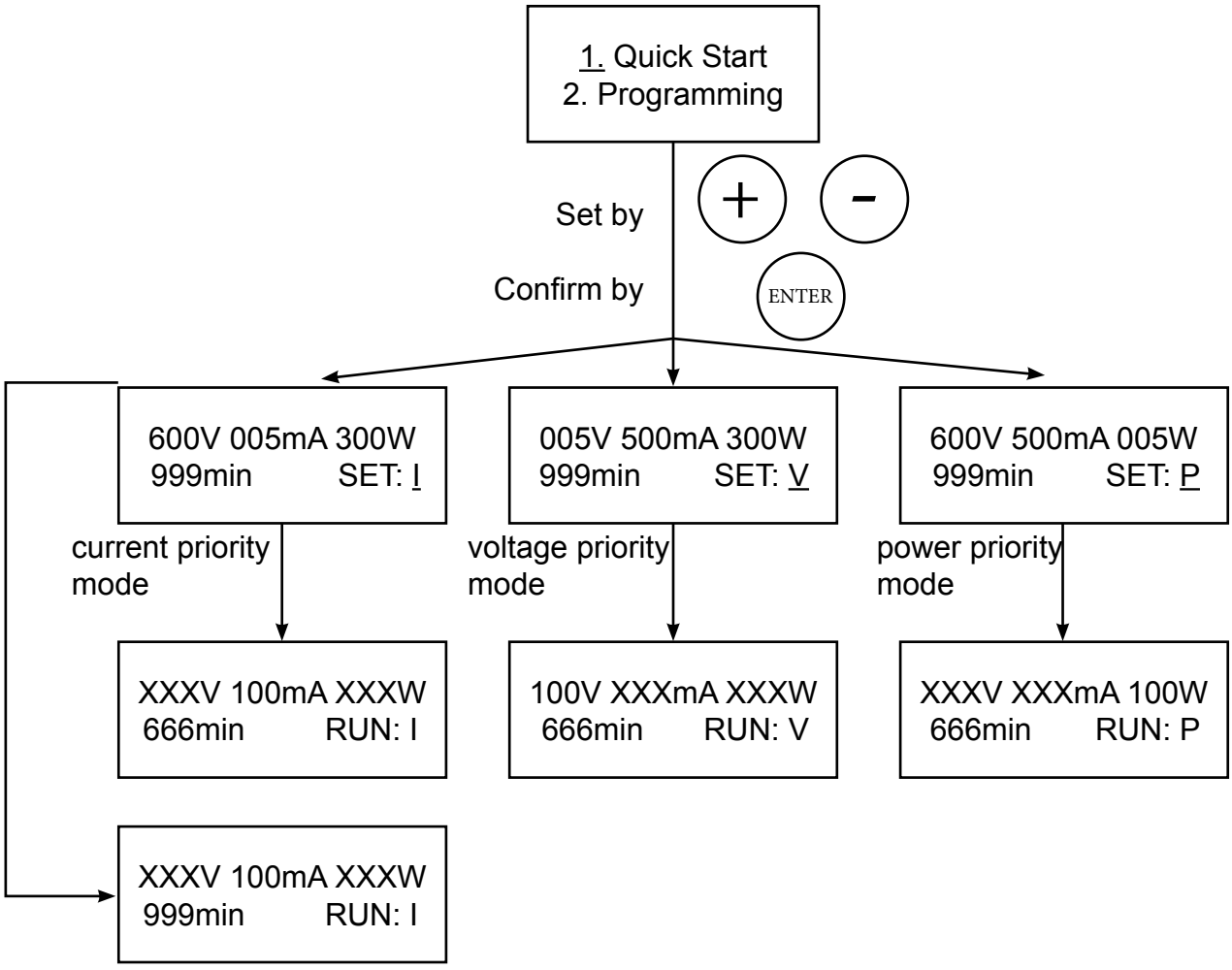
Setting time limit

The default time is 999 minutes. To change the time limit, switch to the required digit using the “SWITCH” keys (+-) and select the desired values with the “SCROLL” keys (left & right arrows). Press “ENTER” to Store settings. Press “RUN / PAUSE” key to run.

2. Programming Menu

Saving a program

Choose a blank program and set the voltage, current or power limit as described above. Press “ENTER” to store program setting. Press “RUN / PAUSE” key to run. The parameters can also be changed using the procedures described above, and the changes will be saved to the program.



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