



**500V, 400mA, 120W  
Electrophoresis Power Supply**

E2502-400 (115V)

E2502-400-E (230V)

**Operating Manual**

**Service and Contact:**

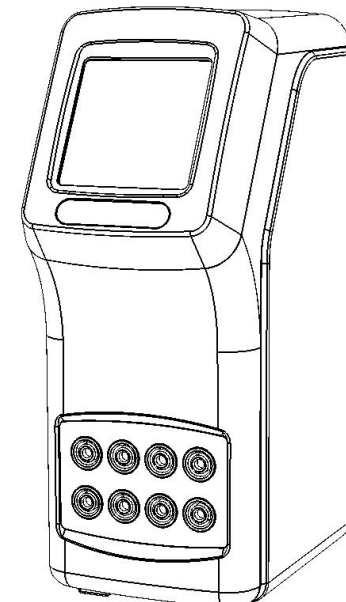
If service or technical support is required, please contact Accuris Instruments by phone at 908-769-555, email at [info@accuris-usa.com](mailto:info@accuris-usa.com) or visit [accuris-usa.com](http://accuris-usa.com) for other contact details



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**This product is for research only**

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## 8. Maintenance



Always disconnect the power cord for cleaning. When cleaning the surfaces of the instrument, use a lightly dampened cloth with mild detergent if needed. Do not use any corrosive solutions that could damage plastic.



Use caution when cleaning near the housing vents. Do not allow liquid to enter the power supply.

## 9. Troubleshooting

Problem	Causes	Measures
No display	Power not connected. Fuse blown.	Check cord connection and power supply, Unplug and re-attach power cord. Check and replace fuse at power inlet.
Voltage or Amperage setting not reached	Maximum wattage exceeded	Resistance of the load (gel tank buffer) is too low. Change buffer concentration.
NO LOAD displayed	Connection wires not attached properly. Buffer is not conductive.	Check wire connections. Check buffer concentration.

## 7. Overview of Electrical Principles

### Definitions:

**Voltage:** The amount of potential energy between two points in a circuit.

**Current:** The time rate of flow of an electric charge, measured in amperes.

**Resistance:** A material's opposition to the flow of electric current, measured in Ohms.

**Power:** The rate at which electric energy is transferred by an electric circuit. Electric power is expressed in units of watts, one watt is equal to one joule per second.

$$\text{Current (I)} = \frac{\text{Voltage (V)}}{\text{Resistance (R)}}$$

$$\text{Resistance (R)} = \frac{\text{Voltage (V)}}{\text{Current (I)}}$$

$$\text{Power (W)} = \text{Current (I)} \times \text{Voltage (V)}$$

## 1. Introduction

Thank you for purchasing the *Accuris PowerVolt™ 500V/400mA* Electrophoresis Power Supply with touch screen control.

This operating manual includes a product introduction, and important operating and safety information. Before using the power supply, please read this manual in its entirety to understand the operation and safety warnings. Keep this manual for future reference.

Please check the contents when opening the box, and if there are any parts missing, damaged, or incorrect, please contact Accuris at 908-769-5555.

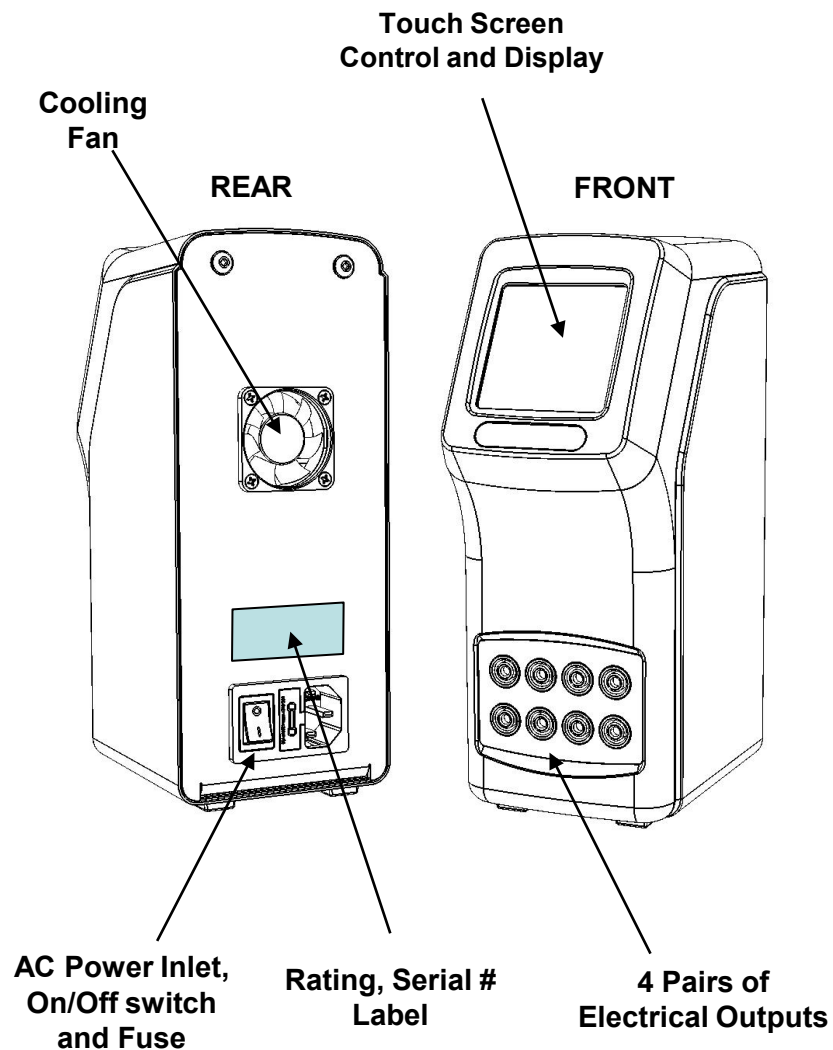
The *Accuris PowerVolt™ 500V* is a DC Power Supply for electrophoresis separations. It is designed for laboratory research applications.

The power supply has 4 sets of outputs that accept standard electrical leads with 4mm banana plugs and should only be used with electrophoresis tanks that incorporate sufficient safety features to prevent electric shock. Some types of shielded plugs may not fit into the output jacks, and in this case a banana jack to plug adapter can be used.

### **WARNING:**

This power supply outputs high voltage and current and should be used only by experienced laboratory personnel that understand how to safely operate the instrument. Incorrect usage can present a shock or electrocution hazard.

## 2. Product Overview



In CONSTANT CURRENT mode, the power supply will output the set mA current parameter, and the voltage will fluctuate relative to the resistance of the load (buffer concentration in the attached electrophoresis tanks) up to a maximum of the voltage setting that has been chosen.

### 6.4 Automatic Cross Over

During an electrophoresis run, the power supply will attempt to maintain the constant voltage or amperage setting, depending on which parameter is set to "CONSTANT".

If, during a run, the non-constant parameter setting (limit) is met due to the resistance of the load, the power supply will automatically "cross over" so the non-constant parameter will now be the constant and limiting parameter. A red outline will appear around the new "constant" value.

### 6.5 Maximum Power Limit

The Accuris PowerVolt™ 500V/400mA Power Supply has a maximum power output of 120 Watts.

Per Ohms Law:

$$\text{Power (W)} = \text{Current (I)} \times \text{Voltage (V)}$$

If the maximum power is reached during an electrophoresis run, the non-constant parameter will be limited to prevent exceeding the maximum power output. PWR LMT will be displayed.

**CAUTION:** It is not recommended to run the power supply at or near the maximum wattage for long periods, as this can cause the power supply and gel tank to get hot. Most standard electrophoresis buffer concentrations will not have such low resistance that the current and voltage level will come close to the maximum power limit.

## 6.2 Setting Parameters

The *Accuris PowerVolt™* Power Supply has 3 main parameters that can be adjusted: Run Time (TIME), Voltage (VOLTAGE), and Current (mAMP).

(See section 7 for an overview of Voltage, Current, Resistance, and Power)

Press the parameter box to adjust the value. The selected parameter box will be highlighted. Press the UP/DOWN arrows to change the value.

Adjust parameters (TIME, VOLTAGE, mAMP) as required for the electrophoresis application.

The timer can be set for 1 min to 20 hours. For a continuous run, set the timer down to 1 min, then press the down button and “CONT” is displayed.

## 6.3 Constant Voltage / Constant Amperage

The Power Supply can be set to run with constant voltage or constant amperage output, with the non-constant parameter set as a limit.

Press the box “CONSTANT ...” to switch between “CONSTANT CURRENT” and “CONSTANT VOLTAGE” running modes.

In constant voltage mode, the power supply will output the set voltage, and the mAmp current value will fluctuate (“float”) depending on the resistance of the load, up to a maximum of the mAmp current setting that has been chosen. The buffer concentration and size of the electrophoresis gel box will dictate the resistance.

## 3. Specifications

<b><i>Accuris PowerVolt™</i> 500V/400mA Power Supply</b>	
Output Voltage	10 to 500 VDC, in 1 V increments
Voltage Accuracy	+/- 2% of displayed value or 3V (whichever is greater)
Output Current	4 to 400mA, in 1 mA increments
Current Accuracy	+/- 2% of displayed value or 5mA (whichever is greater)
Maximum Power	120 Watts
Output Terminals	4 Pair, wired in parallel
Timer	1min to 20 hours, or Continuous
Control Panel	Capacitive touch screen
Display	Color TFT, LCD
Fuse	250V 2.0A, 5x20mm, Type T
Operating Temp	0 – 40° C
Humidity	0 – 95%
Dimensions (W×D×H)	3.5 x 5 x 8.5 in / 9 x 13.5 x 22 cm
Net weight	2.2 lbs / 1.0 kg
Input Electrical	100 to 240 VAC, 50/60Hz

## 4. Installation

Place the power supply on a smooth, level surface in an area where it will not contact liquids, chemicals, excessive humidity or extreme temperatures.

Connect one end of the included power cord to the instrument and the other end to an appropriate electrical outlet. Check the Rating/Serial # label on the rear of the power supply for the required electrical input.

Always leave 2 inches of space on all sides of the power supply to allow for proper ventilation.

## 5. Warnings



To avoid electrical shock, do not use this product with wet hands and ensure that all electrical leads being used are dry. Only use electrical leads that offer sufficient protective insulation and gel boxes that have appropriate safety lid systems and are rated for the appropriate voltage and amperage levels.



Please carefully read this instruction manual before operation to avoid any personal injury. Only trained laboratory personnel should operate the system.



Do not attempt to open or repair the Power Supply. Contact Accuris for service.



Always use the Power Supply in an environment with low humidity and low dust, also keep it away from water, direct sunlight / strong light, corrosive gas, high magnetic fields, heaters, fires and other heat sources.

## 6. Operating guide

### 6.1 Touch Screen Control

