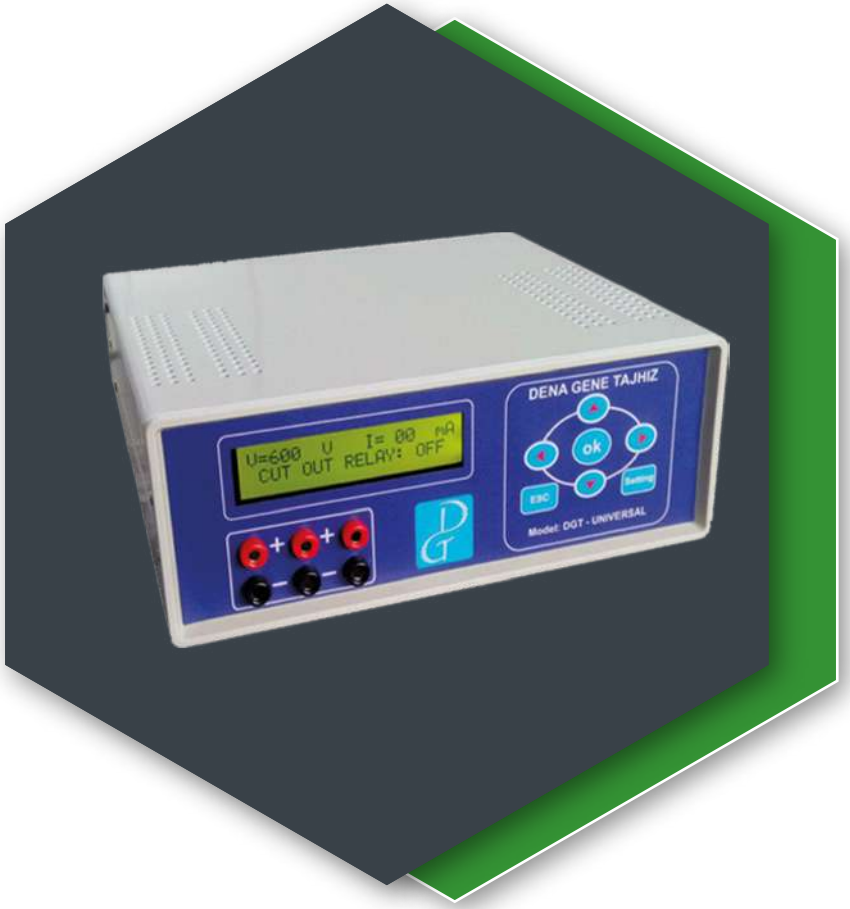
Power Supply - DGT-Universal Model

User Guide

Denagene Tajhiz Company

Biotechnology Lab Equipment manufacturer and designer



Power Supply

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Thank you for choosing the Power Supply from Denagene Tajhiz Company. This operation manual outlines the functions of the instrument. To ensure proper operation، please read the manual carefully before use. Keep this manual for future reference if you encounter any difficulties. Upon unpacking for the first time، please check the instrument and accessories against the packing list. If anything does not match، please contact us.

This manual is a valuable resource for all users of our products، whether you are an experienced professional or just starting your scientific journey. It has been carefully crafted to ensure you have a clear understanding of the features، functionality، and proper usage of our laboratory equipment.

Within these pages، you will find detailed instructions، diagrams، and troubleshooting guides to help you maximize the potential of our products. We have organized the content logically، making it easy for you to navigate through the manual and quickly locate the information you need.

Additionally، this manual is a living document that reflects our commitment to excellence. As we continue to develop and enhance our product offerings، we will provide updates and revisions to ensure you always have the most current information available.

Content

Introduction

The DGT-UNIVERSAL power supply device for electrophoresis، manufactured by Denagene Tajhiz Company، is designed with high precision، quality، and high safety features. It is capable of supplying voltage from 0 to 600 volts with an accuracy of 1 volt، and current from 0 to 400 milliamperes with an accuracy of 1 milliampere، making it competitive with the best brands in the world.

As the name suggests، this device is used to supply voltage for the following techniques:

- SDS-PAGE (Polyacrylamide Gel Electrophoresis)
- Native Page
- Agarose gel electrophoresis
- DNA pulsed field electrophoresis
- Electroblotting (including wet transfer and semidry transfer)
- Denaturing Gradient Gel Electrophoresis (DGGE)

Additionally، this device is suitable for techniques such as IEF (Isoelectric Focusing) and DNA sequencing. Although this power supply apparatus is primarily used to regulate the applied current and voltage in the electrophoresis environment، it can also be used in other settings where cathodes، anodes، and specific current and voltage settings are required. Therefore، other specialists، especially analytical chemists، also extensively utilize this apparatus.

Safety Instruction

Considering that the device is capable of delivering sufficient voltage and current to create a hazardous shock، it is strongly recommended that users adhere to the safety precautions associated with it. To prevent any potential hazards، it is strongly advised that only trained and qualified individuals، based on the device's instructions for use، should operate it.

Only use fully insulated and standardized connector cables and power cords.

Always keep the device dry and clean.

Never use the device in excessively humid environments.

To ensure the cooling of the device، always make sure that the ventilation areas located on the sides of the device are not covered.

The DGT Universal power supply apparatus for electrophoresis is designed for use within a temperature range of 0 to 40 degrees Celsius and a relative humidity of 20 to 80 percent.

Denagene Tajhiz Company does not endorse using the device under conditions outside of these specifications.

Technical Specification

Model	DGT-UNIVERSAL
Simultaneous Connection Capacity	3
Output voltage	0-600 V
Current	0-400 mA
Maximum Output Power	240 W
Timer	1min- 99:59' Hours
Voltage Accuracy	0.1V
Current Accuracy	0.1mA
Efficiency	95 %
Dimensions	22x20x8 cm
Weight	1.8 kg
Operating Temperature	0-50 C

Device Components

1-Display (Voltage، Current، Time)

2. Panel Keypad (including Up and Down arrows، Left and Right arrows، Ok، Setting، ESC)

3. Triple Output Terminal: The red outputs are for the positive pole، and the black outputs are for the negative pole. To drive electrophoresis or blotting، a dual-ended connector cable should be connected to one positive output and one negative output.

4. 3 Amp Input Fuse (rear of the device)

5. 0.5 Amp Output Fuse (rear of the device)

6. 220V Power Input (rear of the device)

7. Power Button (turning the device on and off، located on the rear of the device)

Set up and Installation

Before turning on the apparatus

1. Connect the power cord to the back of the apparatus (ensure that the voltage and current knobs are turned off).

2. Then، use the power button on the back of the apparatus to turn it on.

At this point، when the electrophoresis tank is not connected to the power، the display will show a voltage of 24 volts and a current value of zero.

Next، connect the electrophoresis tank to the apparatus (pay attention to the polarity of the connector cable and the power ports when connecting the electrophoresis tank).

In general، the settings of the DGT Universal power supply apparatus are performed in three steps:

A. Setting the voltage or current.
B. Turning the current relay ON or OFF.
C. Setting the duration of apparatus operation.
These steps will be explained in detail below.

Power Setting is done in two ways:

1. Setting based on voltage mode (constant voltage)
2. Setting based on current mode (constant current)

1. Setting Power in Voltage Mode (constant voltage)

In cases where a specific voltage is desired، press the setting button، then use the Left and Right arrows on the keypad to select the voltage item. Adjust the desired voltage value using the Up and Down arrows on the keypad، and then press the OK button to save the set voltage.

Note that by adjusting the voltage، the current will change proportionally to the set voltage. If the device is set to a specific current، the voltage will change proportionally to the set current، and no further adjustment is required by the user.

2. Setting Power in Current Mode (constant current)

In cases where a specific current is desired، press the setting button، then use the Left and Right arrows on the keypad to select the current item. Adjust the desired current value using the Up and Down arrows on the keypad، and then press the OK button to save the set current.
Please note that when adjusting the voltage of the device، the current will change proportionally to the set voltage. If the device is set to a specific current، the voltage will change proportionally to the set current، and no further adjustment is required by the user.

Setting power based on current (constant current)

In cases where a specific current is desired، press the setting button، then use the Left and Right arrows on the keypad to select the current item. Adjust the desired current value using the Up and Down arrows on the keypad، and then press the Ok button to save the set current.

Setting the power operation time

To do this، you need to set the device's CURRENT RELAY system from OFF to ON mode. After setting the desired current or voltage and pressing the OK button، enter the CURRENT RELAY system. Then، select the ON option using the Up and Down buttons، and press the OK button once to confirm

Setting the power operation time

After setting the CURRENT RELAY power، you will enter the time-setting phase. You can adjust the desired time using the Left and Right buttons on the panel. Then، press the OK button once to save the desired time، and the apparatus will start operating. The most important indicator of the device's operation is observing the amount of current passing through the power source using the CURRENT item on the LCD.

If the current displays a numerical value other than zero، the device is active. Sometimes، due to encountered issues، the apparatus may display a specific number for voltage and current، but no significant event occurs due to the lack of current flow. However، a simple way to check is by observing the presence of bubbles in the buffer. If bubbles are present، the device is applying voltage and current.

The power supply of the electrophoresis system manufactured by Denagene Tajhiz is designed to be resistant to input fluctuations and disturbances. When the voltage or current exceeds the device's capacity (above 600 volts or 400 milliamps)، the power supply will prevent the passage of higher currents and display zero values for the current and voltage.

At this point، the maximum current (400 milliamps) should be applied using the current mode to determine the maximum voltage that can be set when a load (such as an electrophoresis tank) is connected. This means that if the voltage exceeds this threshold، it indicates a current higher than the device's standard (400 milliamps)، which the apparatus does not allow.

Therefore، in cases such as changing buffer properties، malfunctions in devices connected to the power supply، and so on، potential issues may arise.

Please note that in the event of a short circuit، the apparatus will automatically shut down to prevent damage. If you encounter any problems with device settings، turn off the power switch at the back of the apparatus and restart it after a few seconds. Occasionally، the power supply's processing system may become disrupted due to applied noise، and a reset is necessary.

Warranty and After-Sales Service

- Denagene Tajhiz Company provides a one-year warranty for the Vortex Mixer.
- The Vortex Mixer، manufactured by Denagene Tajhiz Company، comes with 10 years of after-sales service.

Documentation and Support

To obtain support for the latest services and support information for all locations, go to:

www.Denagene.com

At the website, you can:

- Access worldwide telephone and fax numbers to contact Technical Support and Sales facilities
- Search through frequently asked questions (FAQs)
- Submit a question directly to Technical Support
- Search for user documents, SDSs, vector maps and sequences, application notes, formulations, handbooks, certificates of analysis, citations, and other product support documents
- Obtain information about customer training
- Download software updates and patches