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SPECTRUM TUBE POWER SUPPLY WITH SAFETY DOOR

CAT NO. PH1199A

Instruction Manual

DANGER: 5,000VAC!! DO NOT TOUCH SOCKETS WHEN POWER IS ON.

GENERAL SPECIFICATIONS

Input Power :	220VAC, 50Hz
Output Rated :	5,000V without spectrum tube.
	1,000V @ 10mA with spectrum tube.
Operating Temperature :	10°C to 40°C
Storage Temperature :	-20°C to 40°C

IMPORTANT SAFETY INSTRUCTIONS

1. The voltage between the 2 sockets is 5,000V. **Do not touch the sockets with the power on. Remove the AC plug from the wall socket when replacing spectrum tubes.**

2. Before using the Spectrum Tube Power Supply, read the following instructions on the spectrum tubes to prolong the life of the tubes.

3. Do not expose the power supply to moisture or water. Only use this unit inside with normal temperature and humidity.

4. Do not disassemble the power supply. Take it to a qualified electrician or return it to the factory when service or repair is required. Incorrect reassembly may result in an electric shock or fire.

FUSE REPLACEMENT

A 1-Amp glass fuse is used for your protection. One spare fuse is also provided in the Fuse Holder. The Fuse Holder drawer is integrated above the electrical cord port at the base of the power supply. To replace the fuse:

1. **Turn the Power Supply OFF.**
2. Remove the electrical cord from the port at the base of the power supply.

3. Gently pull the Fuse Holder drawer out completely from the Housing.
4. The Inner Fuse position is the fuse in the circuit. The Outer Fuse is the spare fuse.
5. Remove the Inner Fuse using a small flat-head screw driver. Discard the burnt fuse appropriately.
6. Carefully remove the Outer Fuse using a small flat-head screw driver.
7. Replace this spare fuse into the original Inner Fuse position.
8. Push the drawer back in the Housing.

OPERATING PROCEDURE

The Spectrum Tube Power Supply is a HIGH VOLTAGE supply. You should be very careful when working with this power supply.

1. Place the power switch to the **OFF** position. **Unplug** the power supply from the outlet when inserting a spectrum tube into the unit.

2. Slide the spectrum tube into the top socket. Very carefully push the tube up and then insert the other end into the bottom socket.

3. Plug the Spectrum Tube Power Supply into a 220VAC, 50Hz power outlet.

4. Turn the power switch to the ON position. The power supply and spectrum tube should now be glowing.

5. The life of a spectrum tube is extended if it is not used for more than 30 second continuously. Cycle the power supply on for 30 seconds then off for 30 seconds to prevent the spectrum tube from overheating. This will greatly increase the usable life of the spectrum tube.

6. **ALWAYS TURN OFF the power switch and unplug the power supply from the outlet before inserting or removing the spectrum tube. DO NOT TOUCH THE SOCKETS WHEN THE POWER SWITCH IS ON or when the power supply is plugged in. Do not put fingers into the sockets at any time.**

SPECTRUM TUBES

Every gas gives off a characteristic light when placed across a high electrical field. Spectrum tubes are built to contain different gaseous atoms or molecules. When a tube is placed into the Spectrum tube Power Supply, the 5,000V field will cause the gases to emit energy in the form of a well defined light state.

When a gas is excited by the high voltage, an electron will be excited to a higher energy level. When the electron returns to a lower energy level, it simultaneously emits a photon of light. This photon of light is always the same energy since the energy change is always the same. Therefore, each excited element emits characteristic wavelengths determined by energy level differences (ΔE) present in that element.

When the spectrum tube is turned on, it may appear to be a particular color with the unaided eye. However, analysis of the spectrum with a spectrometer will reveal a series of sharp (monochromatic) emission lines. Spectrum tubes use research-grades gases and vapors to provide bright-line spectral lines of high clarity. They are designed for optimum intensity and line resolution when examined in a student grade spectrometer equipped with a 200 line/mm (5,000 line/inch) diffraction grating.

The pressure of the various gases in spectrum tubes is a carefully controlled value that will produce the maximum quality of brightness and clarity of the spectral lines. The tube life is extended if operation is cyclic and the tubes are never on for more than 30 seconds. Some tubes using neon, helium and other gases found in cold cathodes display signs can run continuously with less deterioration of the quality of the spectral lines. Others, such as hydrogen, the halogens and water vapor, require more care in operating to increase the life of the spectrum tube. Pure nickel electrodes and the best research grade gases are used, and meticulous care is taken in processing to increase service life. However, the tubes all start to contaminate at a very slow rate when used. How soon this can be detected by the user depends on the sensitivity of the measuring equipment. If the tubes are used as recommended and not allowed to get overheated, the useful life, or time it takes to detect contamination with the usual measuring equipment, is very long.

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