PhysHiVolt

Quality Control Manual

Scope

This manual will help you validate the design, specifications, gauge performance and estimate repeatability of Qosain Scientific's High Voltage Supply (PhysHiVolt). PhysHiVolt is a standalone instrument that can safely and reliably supply high DC Voltage in the range of $0 - 30$ kV. The HVS Unit is a source of high DC voltage in the range of $0 - 30$ kV, with output power upto 30 W. This manual aims to cover general instructions, product specifications, safety precautions, quick start guide, and other necessary working details of the system.

Shipping Checklist

Before a HV Supply is shipped, the unit must fulfill the following conditions:

Visual Inspection

- The sticker shown in Figure 1 is attached on the top plate warning users about the high voltage hazard and to disconnect the supply before performing any servicing.
- The lengths of live and ground wires (with crocodile clip ends) are at least 90 cm.
- Labels on back plate, as shown in Figure 2, for the red live HV wire (+ve) and black ground wire (-ve).
- The print of the front sheet is not removed from anywhere.
- All screws and connections are tightened: no plate or corner is loose.

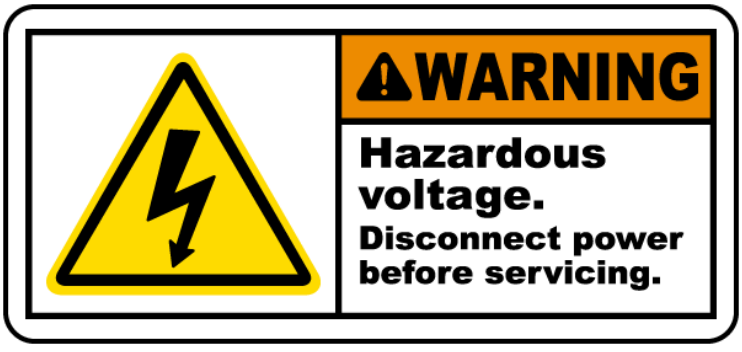

Figure 1: Hazardous voltage warning label should be present on PhysHiVolt's top plate.

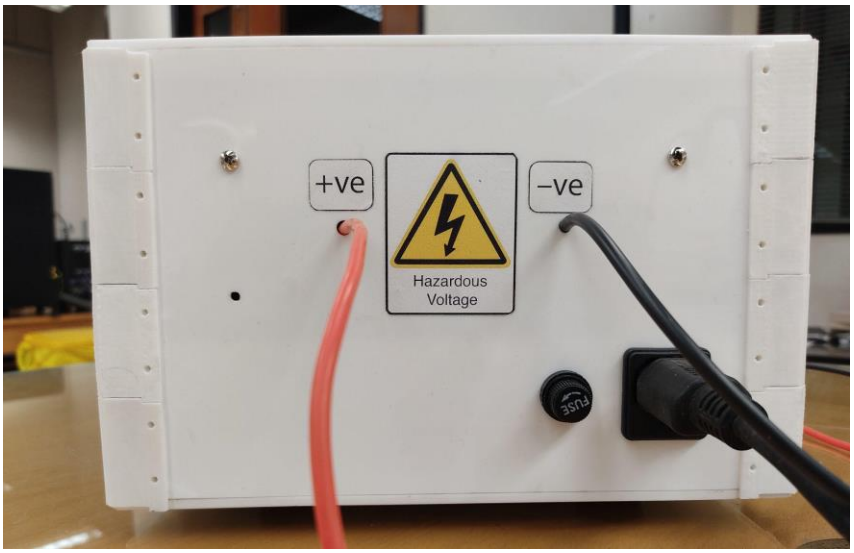

Figure 2: On the backplate of PhysHiVolt, positive and negative terminals are to be labelled along with a warning sign about high voltage.

Testing Procedure

The following components are to be verified once PhysHiVolt is connected to the main power supply.
NOTE: Ensure that you follow all safety precautions given in the user manual of the instrument.

- Toggling the power button switches the supply on and off.
- When switched on, the LCD screen should light up.
- When rotating the knob, the voltage reading increases from a minimum value of 0 kV to at least 30 kV with a resolution of 0.01 kV.
- To roughly check that the LCD display and actual output voltage are in agreement with each other, short the live and ground wire (no longer than 1 second) and check the following:
    - The distance at which sparking occurs at 30 kV should be double the discharge distance at 15 kV.
- Set a particular voltage reading and leave the supply on for 5 minutes and observe that there is no drop in the voltage reading (acceptable fluctuation = ± 0.02 kV).

Packing Requirements

When packing PhysHiVolt, the availability and quality of the following components (in addition to testing of PhysHiVolt) are to be verified:

- User manual of the latest version.
- Brochure of the latest version.
- A total of 6 supplementary fuses, rated 5 A. Out of these, three are HV fuses (larger in size) and three are main power connector fuses (smaller in size).

- Earthed power cord for the main power supply is provided.
    - Check for continuity between earth plug and pin.
- PhysHiVolt, once packed, resembles Figure 3.

Figure 3: The high voltage supply, after being adequately packed, needs to be placed in a cardboard box and supported by polystyrene sheets, before shipping.