

## Operating Instruction for HCU Power Supplies

### Introduction

The HCU is a turn-key power supply for Helium-Neon (HeNe) laser tubes that incorporates all of the appropriate safety features required by US and European regulations. This unit is RoHS compliant.

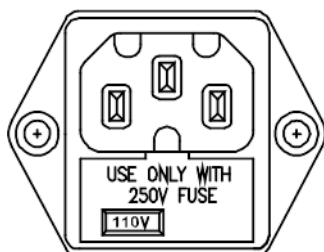
There are multiple versions of the HCU power supply. Each version supports different HeNe tubes. Using the table below, please ensure the laser power supply is matched to a compatible laser tube.

| Model Number             | Set Current (mA) | V Range   | Start Voltage |
|--------------------------|------------------|-----------|---------------|
| HCU(SL92DBKXZ/B395)/B401 | 3.5              | 1250-2000 | >8kV          |
| HCU(SL92DBKXZ/B395)/B402 | 5.0              | 1250-2000 | >8kV          |
| HCU(SL92BKXZ/B397)/B403  | 5.25             | 3000-3800 | >10kV         |
| HCU(SL92BKXZ/B396)/B404  | 6.5              | 2000-2800 | >10kV         |
| HCU(SL93BKXZ/B397)/B405  | 6.5              | 3000-3800 | >12kV         |
| HCU(SL93BKXZ/B397)/B406  | 7.0              | 3000-3800 | >12kV         |
| HCU(SL92BKXZ/B398)/B407  | 6.5              | 1600-2100 | >10kV         |
| HCU(SL92BKXZ/B400)/B409  | 4.9              | 1250-2000 | >10kV         |
| HCU(SL92DBKXZ/B395)/B410 | 4.0              | 1250-2000 | >8kV          |
| HCU(SL92DBKXZ/B395)/B411 | 4.5              | 1250-2000 | >8kV          |
| HCU(SL92DBKXZ/B395)/B412 | 5.25             | 1250-2000 | >8kV          |
| HCU(SL92BKXZ/B396)/B413  | 5.25             | 2000-2800 | >10kV         |
| HCU(SL92BKXZ/B396)/B414  | 6.0              | 2000-2800 | >10kV         |
| HCU(SL92BKXZ/B399)/B415  | 7.0              | 2200-2800 | >10kV         |

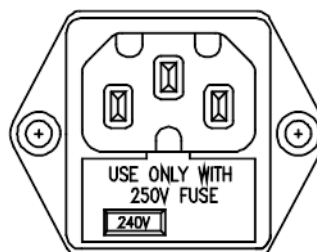
### Installation

The HCU will not operate until the fuse assembly is correctly installed. (See Fig 1) Installation depends on your local AC supply. The enclosed fuse assembly includes a 250V - 5A slow blow fuse installed. Note: USE ONLY 250V-5A SLOW BLOW FUSES WITH THIS PRODUCT. A component within this fuse assembly is the input line voltage selector. The input line voltage selector configures the correct input line voltage for the local environment. This can be accomplished by sliding the input line voltage selector into the side of the fuse assembly. The desired input line voltage can be seen right side up in the window on the face of the fuse assembly. See Figure 1 for the proper voltage selection for your region of the world. **NOTE: FAILING TO SELECT THE CORRECT INPUT LINE VOLTAGE WILL RESULT IN FAILURE OF THE UNIT AND WILL VOID THE WARRANTY.** Once the correct line voltage is selected, insert the fuse assembly into the power cord connector located on the back of the unit. The fuse assembly will be flush with the face of the AC connector when properly installed. Once the fuse assembly and voltage selector are correctly installed, insert the supplied UL rated, US IEC320 Female to NEMA 5-15P power cord into the HCU power unit. Note: Users outside the United States may need to supply their own power cable.

Figure 1



Use 120V for  
100-130 VAC



Use 240V for  
200-260 VAC



Before the unit can be operated, the laser tube must be connected to the HCU power supply. Do not turn on the power supply before plugging in the laser tube. Do not plug in the tube after the HCU is turned on. Do so by inserting the high voltage connector from the HeNe laser tube into the corresponding high voltage connector of the power supply. Check for proper orientation of the high voltage connector. It is polarized and will only fit when properly oriented. Insert the connector firmly and fully into the HCU power supply. Failure to fully engage this connector could result in poor laser operation and damage to both high voltage connectors.

To ensure proper and optimal laser operation, only use the HCU power supply that is appropriate for the HeNe laser tube in use. Using the incorrect combination of laser tube and power supply will result in operation failure.

Power Supply voltage and current rating are provided on the bottom of each HCU power supply.

- It is recommended that the operating current of the laser tube match the output current of the HCU Power supply within  $\pm 0.1\text{mA}$ . Should this guidance not be followed, noisy laser tube operation may occur.
- It is recommended that the operating voltage of the power supply match the specifications of the laser tube within  $\pm 300$  Volts of the HCU's rating.
- The start voltage of the laser tube should be lower than the rating listed on the HCU power supply. Should this guidance not be followed, the laser tube may not start reliably.

### **Fuse Replacement:**

To remove the fuse assembly, insert a flat blade screw driver into the groove on top of the fuse assembly and gently pry it from the power cord connector. Remove the fuse and replace with a 250V - 5 Amp slow blow fuse (Fuse Type 2AG). While replacing the fuse assembly as described above, ensure that the input voltage selector is still properly configured.

### **Remote Interlock Operation**

To use the remote interlock connector, remove the shorting conductor provided. The connector may then be wired into the user's interlock system. The circuit is designed to activate the laser output when the two contacts of the connector are shorted together (normally closed state). This can be achieved via a simple switch or with relay contacts.

The voltage on this connector is 5VDC and is generated internally within the HCU. It is completely isolated from the AC line voltage. Failure of the remote interlock feature due to improper application of external voltages is not covered by warranty.

### **Operating Procedures**

The system is equipped with a key switch located on the front panel. This is used by the customer to activate and deactivate the laser. A 5-second delay will begin after the key switch is turned to the 'ON' position. The emissions indicator on the front panel will come on to warn of eminent laser emission. The laser system will be 'OFF' when the key is in the vertical position.

The laser emissions can be controlled from the remote interlock connector. If the factory supplied remote interlock plug is removed while the laser is in operation, laser emissions will cease immediately. If the remote interlock plug is inserted into the remote interlock connector, laser emissions will resume after a 3-5 second safety delay. If the remote interlock connector has been interfaced to external circuits, laser emissions will be controlled in an identical manner.

**Caution:** Use of controls or adjustment or performance of procedures other than those specified herein may result in hazardous radiation exposure.



**Figure 2**

High Voltage  
HeNe  
Laser Connector

Laser Emission  
Indicator

2 Position  
Key Switch



**Figure 3**

Power  
Cord  
Connector  
& Fuse  
Assembly

Remote  
Interlock  
Connector



## Maintenance & Service

The HCU power supply contain no user servicable parts. Return the HCU to Power Technology for service. Due to the risk of high voltage exposure, do not open the HCU.

## Warranty

Unless otherwise noted, PTI warrants products to be free of defect in workmanship and material for a period of twelve (12) months from the date of shipment. The customer must make all claims under these warranties, and no claim will be accepted from a third party. Warranties are non-transferable. PTI will repair or replace product, provided customer notifies PTI of defect within warranty period and pre-authorizes return of product as outlined in "Returns" section above. Any product repaired or replaced under warranty is only warranted for the period of time remaining in the original warranty for the product. All repairs are warranted for a period of ninety (90) days. PTI's liability is limited to the replacement cost of product. PTI is not responsible for consequential damages. For full details, please see PTI's terms & conditions online at <https://www.powertechnology.com/terms-and-conditions>.

