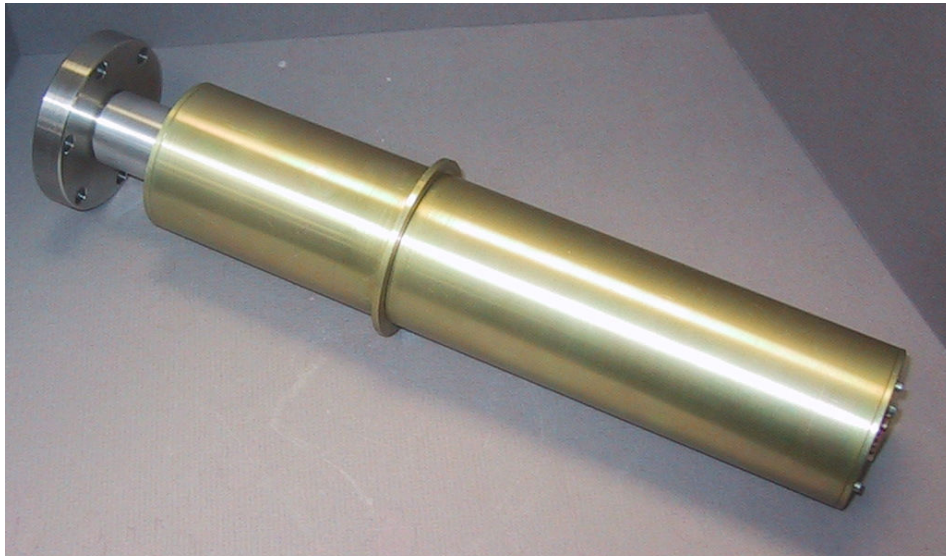


# Resonance Ltd.

## RF Powered Lyman Alpha Line Source

Model HHeLM-L  
Rev 3



143 Ferndale Drive North, Barrie, Ontario, L4M 9V9, Canada

Tel: (705) 733-3633 Fax: (705) 733-1388

Email: [res@resonance.on.ca](mailto:res@resonance.on.ca)

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## Description

The Resonance RF powered line Lyman alpha source is a reliable, maintenance free, compact source of 121.6 NM Ultraviolet with an operating life in excess of 2000 hours.

The Resonance line sources are sealed, RF excited, sources with a UV window packaged in an EMI shielding enclosure. The lamp mounts to a 2.75-inch or larger CF type flange. The lamp assembly has an integral RF exciter powered by a small wall plug power supply

## General Specifications:

Typical flux of  $> 1 \times 10^{14}$  photons per second per steradian in the 121.6 resonance line

Lamp bulb plasma cavity 15 mm x 9 mm ID

Integrated units includes lamp bulb in housing with EMI shielded exciter/controller, 2.75 in CF Adapter, wall plug power supply

Input power to wall plug adapter 100 to 250 V, 50 or 60 Hz, 50 watts max

Lamp unit input power 28 V 1 amp max

Case temperature range 0 to +55 degrees C

Running Life: min 1500 hrs > 2000 hrs typical

Stability: max drift of +/- 2.5 % per hr < +/- 1% per hr typical

Absolute intensity determined by photo ionization or by traceable NBS standard

Spectrum of entire UV region

## Power:

### Lamp

20-watt RF supply (Integral to lamp housing).

Less than 1 amp at 28VDC

### Power Supply

Power in

100 to 240 volts AC 50-60 HZ

0.5 amps at 110 volts AC maximum

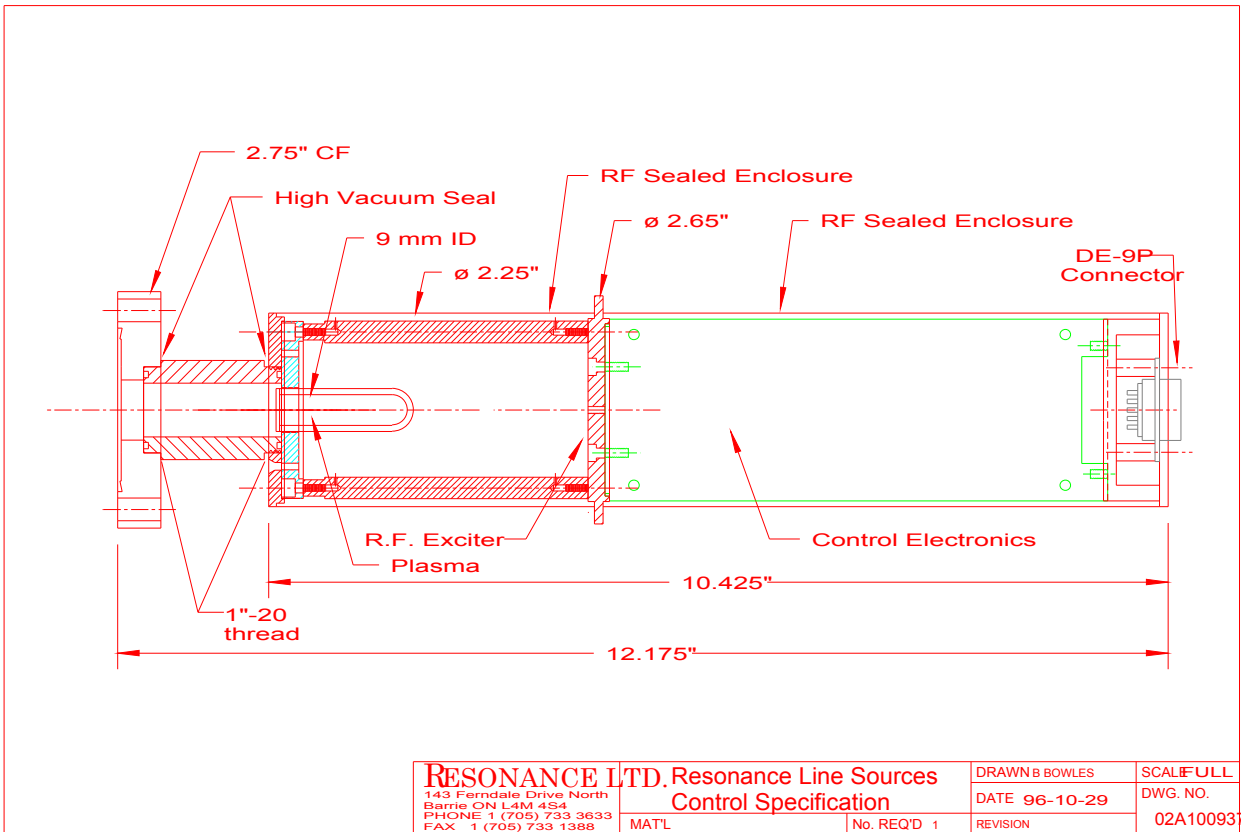
## Mass:

L Lamp: 800 g

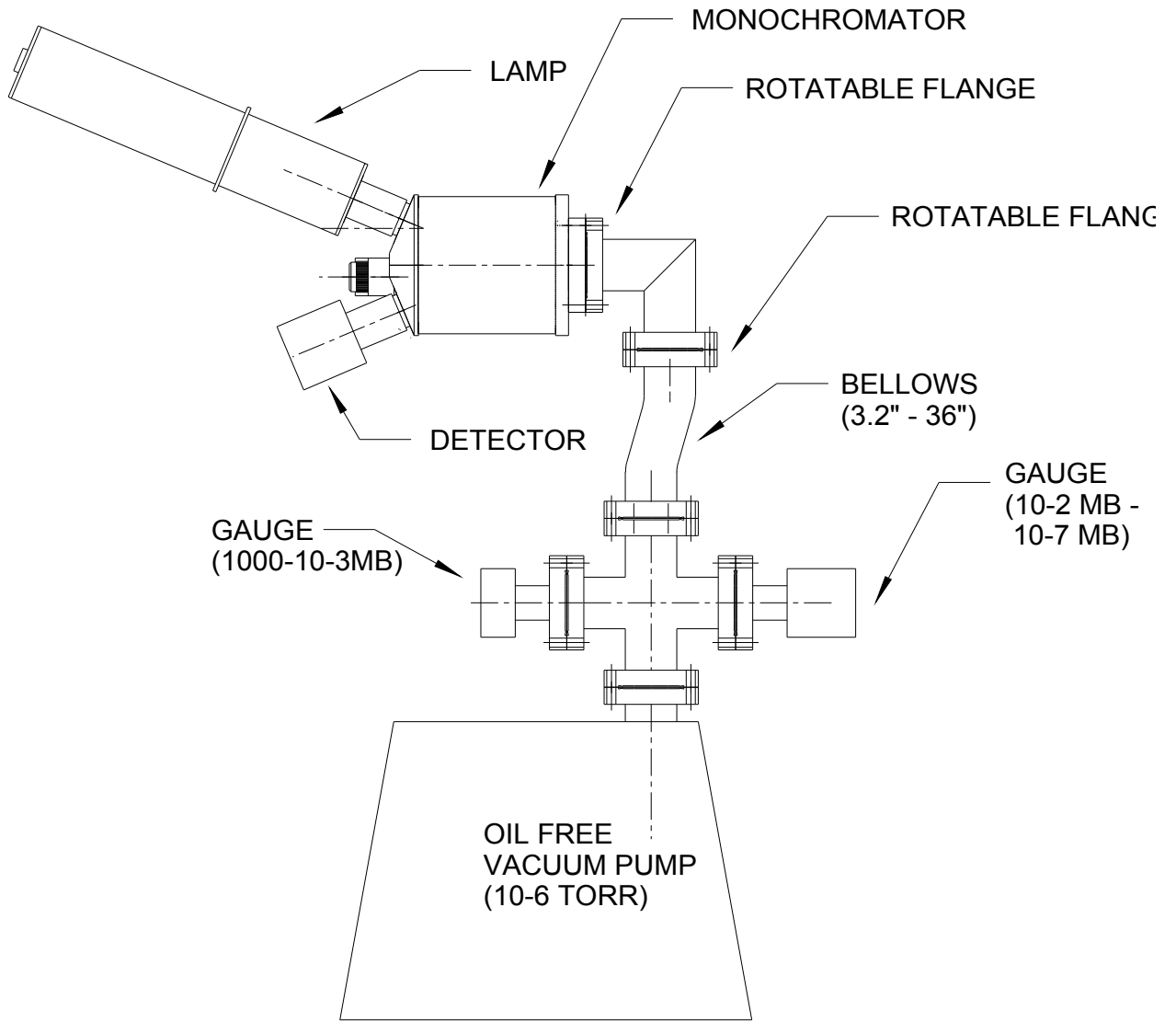
Power supply: 400 g

Vacuum adapter: 57.15 mm CF flange at output.

**Configuration:**



# Typical Installation



## Operating instructions:

### \*\*\* WARNING EYE HAZARD \*\*\*

**Do not look directly at the lamp plasma unless wearing glasses. Normal eyeglasses will block extreme UV of all lamps except Mercury and D2. For these lamps use special UV blocking glasses.**

### \*\*\* WARNING: AVOID DAMAGING WINDOW SEAL \*\*\*

**Do not use chloroform, acetone or xylene to clean the lamp window. Use of these (or similar based solvents) might dissolve the window or the window seal.**

#### **1: Inspect the lamp window**

Inspect the front of the lamp window and clean it if contamination is suspected. [See lamp window cleaning instructions](#)

#### **2: Pre installation test**

Plug the lamp into the power supply Plug power supply into the wall at 110 volts.. If the lamp does not light or problems occur refer to the [troubleshooting guide](#).

#### **3: Mount the lamp**

Ensure that the lamp is properly mounted. ([see mounting and heat sinking instructions](#) ).

#### **4: Power up the lamp**

Plug the lamp into the power supply Plug power supply into the wall at 110 volts. The lamp visible light may be observed through a 1/16" hole in the front section near the bulb If the lamp does not light or problems occur refer to the [troubleshooting guide](#).

## Maintenance

The only maintenance necessary is to ensure that the window remains clean. . [See lamp window cleaning instructions](#)

## Lamp DE-9 connector pin out

Pin 1	ground
Pin 2	28VDC
Pin 3	Heater Monitor
Pin 5	Intensity Monitor

## Power Supply:

The power supply has a green LED which is on when the supply is working normally. Flashing or off indicates an overload or defective condition.

### **Accessories:**

1. Short adapter for wide angle output
2. Lens assembly
3. Modulator
4. UV diodes
5. PSD and Pulse counting
6. Detector assemblies
7. McPherson or Acton flanges
8. Heat Sink

### **Special Options:**

Space qualification,  
Miniature  
Low power

Configurations; High flux,  
High power

### **High Operating Temperatures**

If the Lamp operating case temperature is above 40°C we recommend operating the lamps either with a heat sink or with a small cooling fan. Cool operation will enhance the spectral purity of the lamp output and prolong the life of the electronics.

### **Lamp Mounting**

Refer to the configuration drawings above. The normal mounting configuration is with a 2.75 inch Conflat type flange. The lamp has been vacuum tested and will bolt onto a standard flange or adapter. The lamp is designed to operate on High Vacuum equipment at pressures less than  $10^{-7}$  torr. The seals in the mounting adapters are viton and should operate to vacuums less than  $10^{-9}$  torr. The lamp is not designed to be baked to more than 100 C. Precautions should be taken to insure the lamp does not get heated above this temperature during system bake-outs. Also the lamp should not be operated during system bake-outs

## LAMP WINDOW CLEANING INSTRUCTIONS:

The lamp window is polished magnesium fluoride and its vacuum ultraviolet transmission will be degraded if it is touched or otherwise contaminated. In all but the best vacuum systems a slow loss of window transmission will result from photo polymerization of organic materials on the outside window surface. Both of these problems may be overcome by proper cleaning of the window. A small bottle of polishing powder (1 micron aluminum oxide powder) and cotton tipped applicators are included with the lamp unit.

Inspect the window for any signs of gross contamination, such as fingerprints. If there are signs of this, first clean the window with polishing powder (aluminum oxide) following the instructions below. All cleaning operations are carried out with cotton tipped applicators or with lint free tissues. Apply the polishing powder to an applicator tip and gently polish the window. Repeat until there is no evidence of a film on the window when it is viewed with reflected light. Wipe away excess powder with a dry applicator. A few specks of powder on the window will have a negligible effect on the optical transmission. The final bits of powder may be removed by directing a stream of ultra-high-purity helium, nitrogen or argon across the window. Never use a lab source of air for this process because it may contain compressor oil.

## TROUBLE SHOOTING GUIDE

### Symptom

### Remedy

Lamp intensity appears to go down

This is most often caused by contamination of the outside of the lamp window. Will occur in vacuum systems with  $10(-7)$  torr total pressure and  $10(-9)$  torr partial pressure of organic materials. Clean the window according to the window cleaning instructions in section 2.

Lamp does not start

Often after sitting for a while the lamps are hard to start. Repeat the starting procedure until the plasma strikes.

The lamp current normal but the lamp does not start.

As a last resort you can start the lamp by holding a Tesla coil in the vicinity of the lamp window. Be VERY CAREFUL that the coil does not arc to the window or lamp can as this can damage the window, the lamp electronics, and even the power supply.

### Standard Lamp Temperature Modification Procedure

1. Connect the serial port of the lamp adaptor (available from Resonance Ltd) to the serial port on a computer.
2. Start the Hyper Terminal program on the computer.
3. Enter a name for your connection (e.g. "Standard Lamp").
4. Enter the settings: Connect using: Com 1 (or whichever port you have connected the lamp to), Bits per second: 9600, Data bits: 8, Parity: None, Stop bits: 1, Flow control: None. Click "Okay"
5. If the lamp is on, a stream of numbers will appear. Press the "\n" key when the stream comes to the end of a line and a menu will appear.
6. Select the third option on the menu and enter the heater set point you would like the lamp to run at. Hit the Enter key and the lamp will adjust to the new setting.

\*\* The lamp arrives with a heater set point of  $\sim 3600$  (see following page for lamp output). Different spectra can be obtained by varying the heater set point.