



KrLM-LQD12L

Operating Manual

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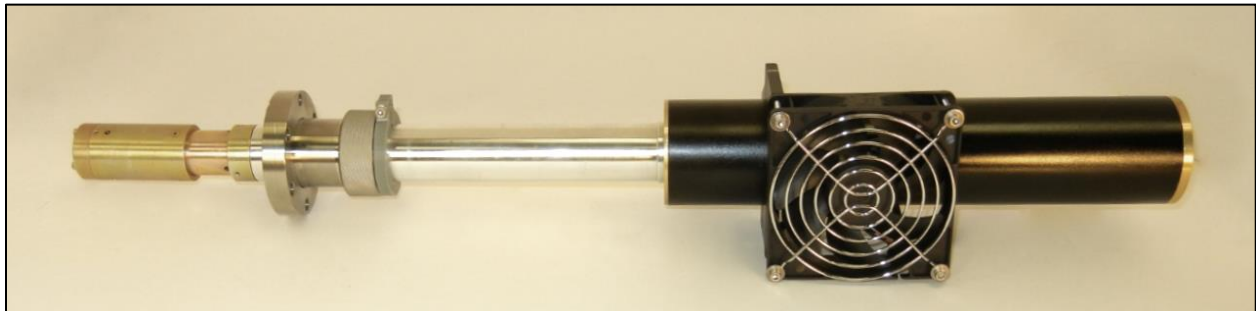


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General Characteristics

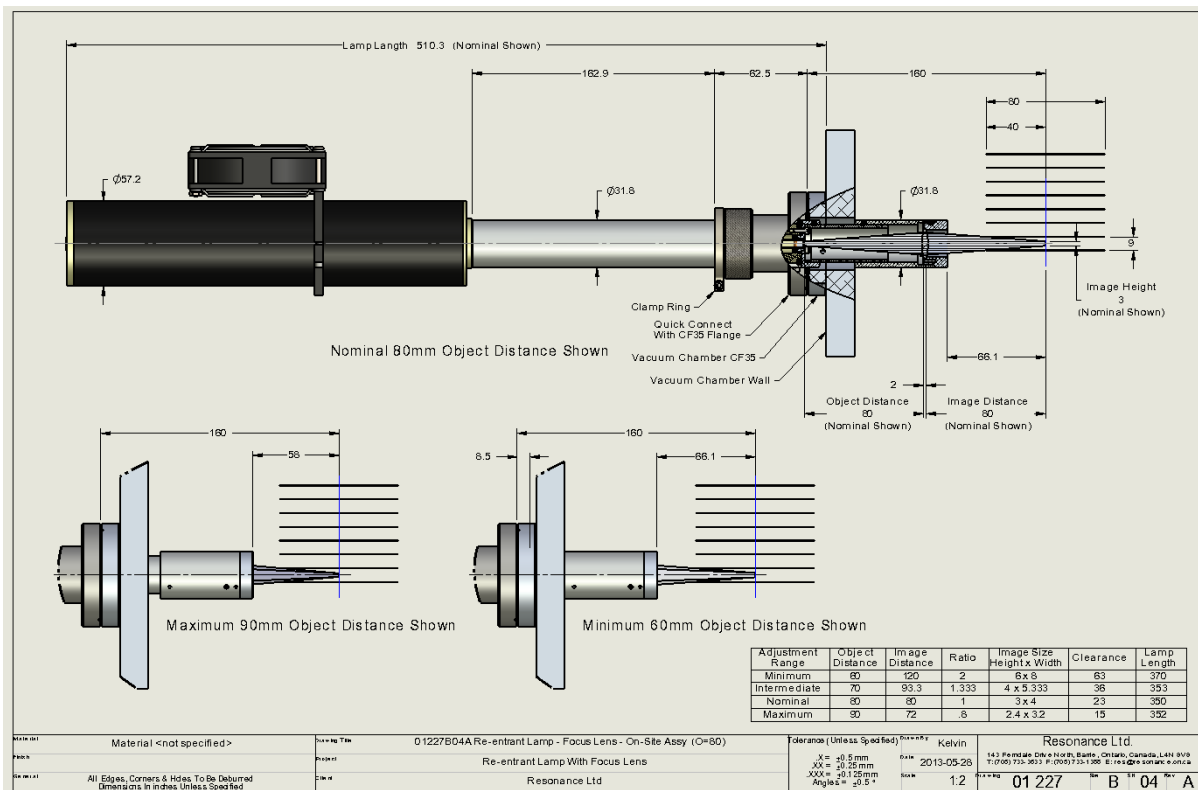
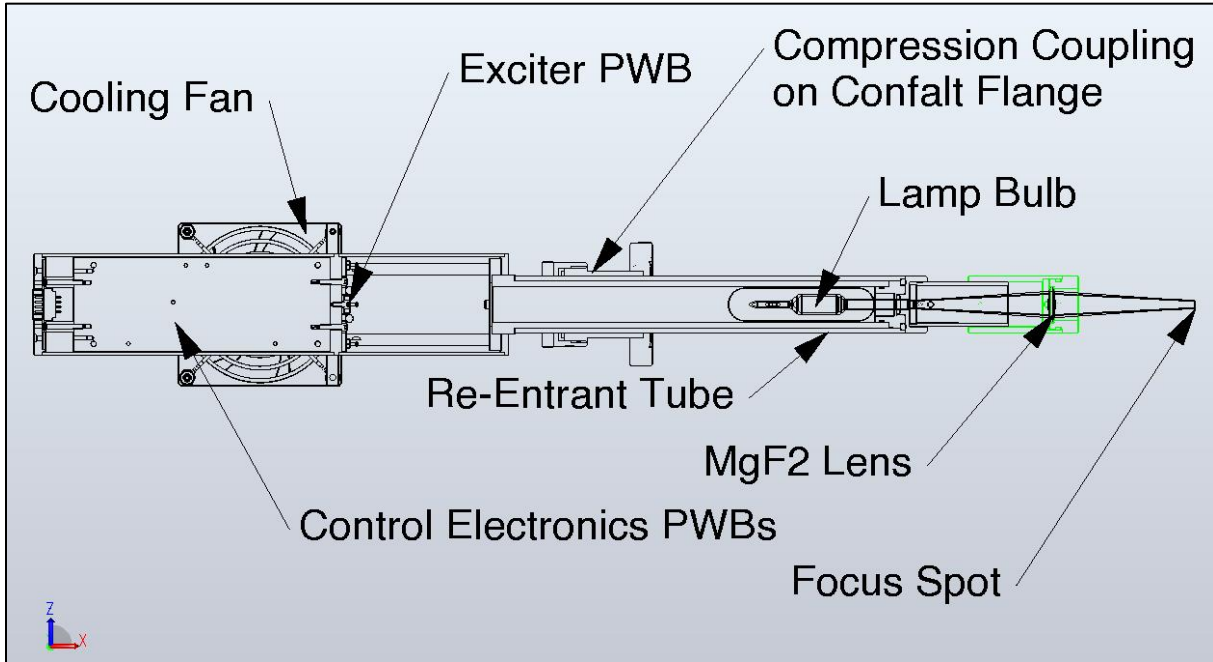
The Resonance RF powered Krypton Line Source is designed to be a reliable and maintenance free compact source of 123.6 nm and 116.5 nm emission with an operating life in excess of 4000 hours.

The Resonance Rare Gas Line Sources are sealed RF excited sources with Magnesium Fluoride windows in EMI shielded enclosures. The lamp mounts to a 2.75 inch or larger CF type flange. The lamp assembly has an integral RF exciter that is powered by a small wall plug power supply.

Specifications

- Lamp bulb flux of 2.8×10^{15} photons per second per steradian
- Flux on focus flux $> 8 \times 10^{12}$
- Integrated Unit 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 250V, 50 or 60 Hz, 50 watts max
- Lamp unit input power 28V 1 Amp max
- Case temperature range 0 to +55 degrees C
- Running Life: min 1500hrs; typical > 4000 hrs.
- Stability: Max drift of +/- 1% per hr.; $< +/- 0.2\%$ per hr. typical
- Spectrum of entire VUV region

Configuration Drawings



Accessories

- Breakout connector for monitoring Stamp Lamp microcontroller
- UV diodes and Spectrometers
- PSD and Pulse counting
- Detector assemblies
- McPherson or Acton flanges
- Signal break-out box

Special Options

- Space qualification
- Miniature low power configurations
- High flux
- High power configurations

Mounting and Heat Sinking

A cooling fan will maintain the lamp at room temperature.

Mounting Re-Entrant Lamps

The lamp has been vacuum tested and should 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.

Refer to the lamp configuration drawings (in this manual). The normal way to mount the lamp is with a 2.75" inch conflat type flange. When the lamp is attached to the conflat it is sealed to the Conflat-type flange with the Compression Coupling (fig. 1). After the compression coupling is tightened, slide and tighten the Clamp Ring (fig. 2). The Clamp Ring prevents the lamp from being sucked into the chamber.

Only after the Clamp ring is in place can the vacuum be applied.

The lamp is not designed to be bakeable to more than 100°C (non-operational). 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.

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.

WARNING DO NOT HEAT ABOVE 175°C

Step 1: Mount the Lamp and Evacuate

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

Step 2: Power up the Lamp

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

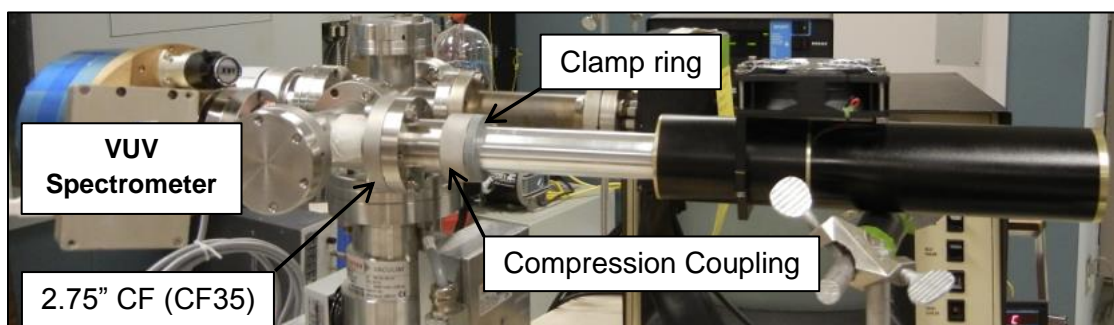


Figure 3: Shows Lamp during vacuum testing at Resonance

Window and Lens Cleaning

The lamp window, which is polished and specially selected for its vacuum ultraviolet transmission properties, 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. 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 cross 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.

The lens has much less exposure to VUV and also has more sensitive surfaces and using the polishing powder is not recommended.

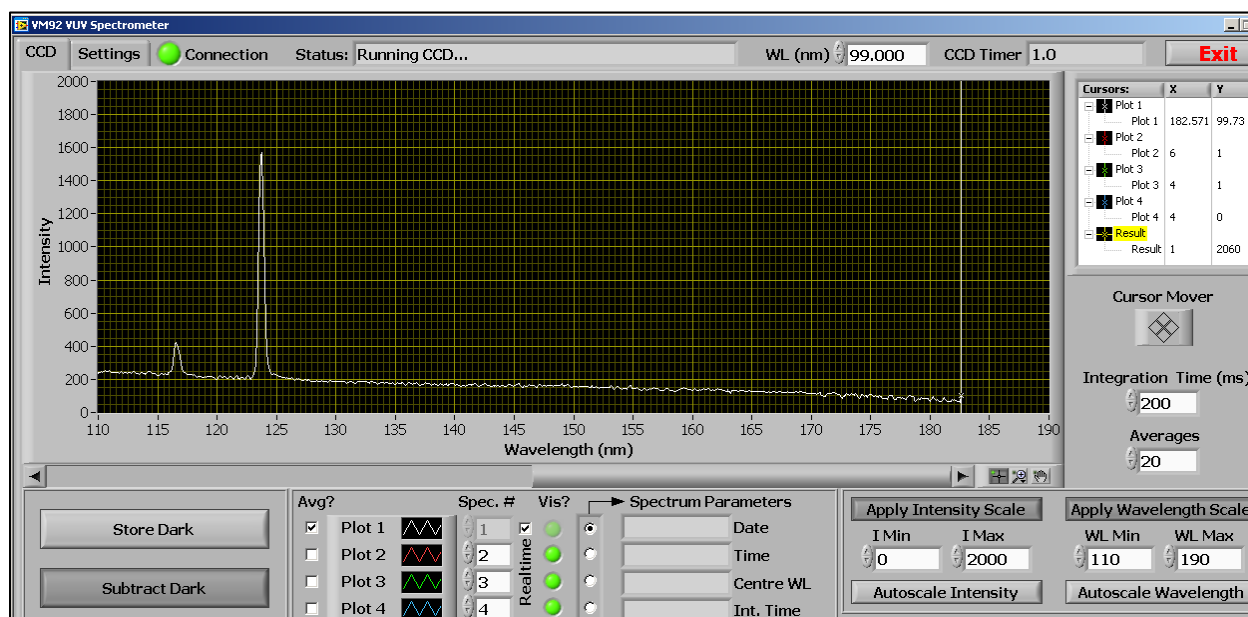
To clean the lens we recommend the following procedure:

1. Fold a piece of lens tissue paper to create a folded edge that is a little longer than the size of the optic. A haemostat is particularly suited to securely hold the folded tissue.
2. Wet the folded edge of the tissue with acetone.
3. Wipe the optic with the lens tissue paper with one continuous motion. Apply some pressure on the wipe to remove stubborn stains.
4. Repeat this process, always with new lens tissue paper to eliminate depositing any contamination on the optic. A final wipe with methanol is recommended since methanol does not leave streaks on the surface like acetone. Isopropyl alcohol is also effective, but it too can leave streaks like acetone. If the size of the optic is very small cotton applicators can be used instead of lens tissue paper, and the procedure is still the same.

Calibration

Lamp Data	
Calibration Standard	CA348 Csl Detector
Product	Krypton Line Source re-entrant style with lens
Date	
Lamp Serial#	
Model Number	KrLM-LQD
Wavelength	123.6, 116.5nm
Diode Type	Csl 348
Size of Focus Spot	3mm circular
VUV Flux on Focus Spot	1.4×10^{13}
Tested to Vacuum Level	1.4×10^{-6}
Measure % Drift per hour over 15.6 hours	+0.29% per hour with 110mtorr air in chamber to prevent photo-polymeric attenuation of VUV.

VUV Spectrum of Lamp (without lens, which further attenuates 116.5 relative to 123.6nm)



Troubleshooting

Lamp Intensity appears to go down

This is often caused by photo-polymeric contamination of the lamp window. Clean the window according to the window cleaning instructions in this document.

The attenuation caused by photo polymeric contamination of the lamp window can be overcome by operating the lamp at 1 to 120 Millitorr of clean air. At a lamp window to detector distance of roughly 120 mm 110 Millitorr air resulted in a reduction of the VUV of only 15 % but enabled stable operation for many hours without cleaning the window.

Lamp Does Not Start

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

Contact

Resonance Ltd. stands behind every product we sell. We welcome feedback and encourage any of our customers to contact us with questions, or concerns. You may contact us through e-mail, our website, telephone, or fax!

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