

**VACUUM ULTRAVIOLET
DEUTERIUM LIGHT SOURCE**

The Model 632 Deuterium lamp features a Magnesium Fluoride front window, 1mm diameter emitting plasma and ~f/5 output. The source system includes cables, lamp housing and a power supply, Model 732, for lamp operation at 200mA 70V. This source is useful for vacuum ultraviolet (UV) and deep UV operation. Output between 380 and 165nm is continuous; below 165nm, molecular lines predominate.

The Model 632 Deuterium lamp has specially developed end-on cylindrical geometry. The front, sealing window, is polished Magnesium Fluoride, cut with its optical axis perpendicular to its face.

Over time, accumulation of contaminants on the outside surface of the window degrades lamp output, eventually to a point where the lamp is no longer useful for operation at short wavelengths. One remedy is to set up the source with a small flow of pure Argon to buffer the outside surface of the window, with a differential pumping system between the lamp and the vacuum system. With this method, there are no observable external window degradation effects. There is also the possibility to remove the absorbing contaminant film, by polishing the window as required.

This lamp has a 5" outer-diameter mounting flange. It is suitable for use on the slit assemblies found on most McPherson spectrometers. This light source system is convenient to use, demonstrates excellent stability, and has found widespread popularity through the vacuum and deep UV.

**FEATURES**

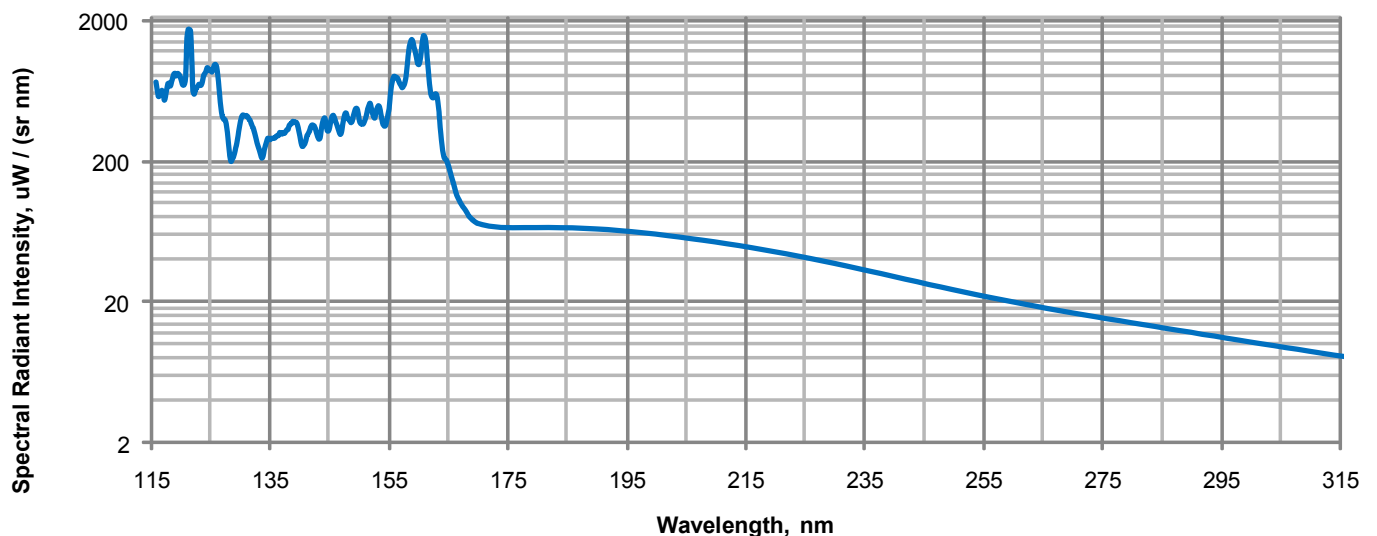
- 30 watt lamp
- Beam circular f/5
- Magnesium Fluoride front window
- No flowing gas, coolant or pumps required
- Fits directly on McPherson slit assemblies
- Optional, calibration for 115-400nm range
- Optional, vacuum UV reflective condenser

Model 732 power supply

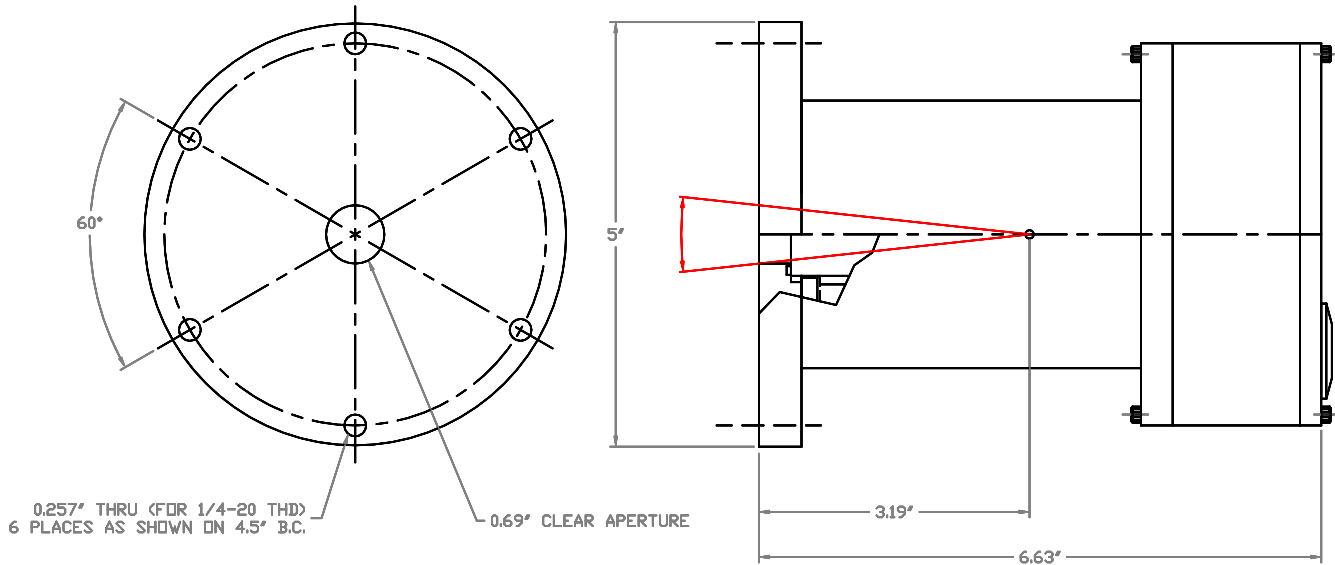
- Easy to use, line operated power supply
- Universal power input

Physical Dimensions

- Width: 8.38 In (21.3 cm)
- Height: 5.22 In (13.3 cm)
- Depth: 14.38 In (36.5 cm)



OUTLINE DRAWING



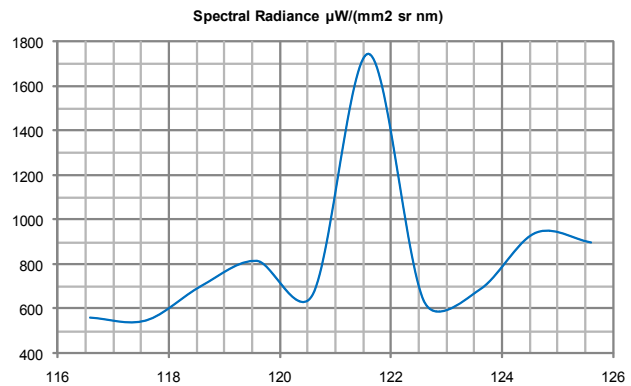
**OPTIONAL CALIBRATION
ABSOLUTE STANDARD OF SPECTRAL RADIANCE**

The Model 632 Deuterium lamp output calibration is done in comparison with a synchrotron storage ring. The light from the synchrotron and the Deuterium source are directed through an analyzing monochromator, measured and compared.

The synchrotron light serves as a primary radiation standard. Beams are exactly defined by apertures and aligned for interception of maximum spectral radiance. Lamps are aged and the windows polished with a high purity alumina and cleaned with ethyl alcohol before performing calibration measurements.

Lamps are delivered with a comprehensive calibration certificate supplying spectral radiance values for the entire 115 to 400nm range. Results in the 113 to 170nm range are obtained at resolutions of 0.4nm, 0.8nm and 1.6nm and collected in 0.2nm increments. Results from 170 to 360nm are collected at 5nm increments with a resolution of 0.6nm. Above 360nm, results are collected at resolutions of 0.8nm and 1.6nm in 0.5nm increments.

A very small sample of chart and tabular data provided at right, for reference only.



| Wavelength, nm | Spectral Radiance, $\mu\text{W}/(\text{mm}^2 \text{ sr nm})$ |
|----------------|--|
| 116.6 | 560 |
| 117.6 | 547 |
| 118.6 | 703 |
| 119.6 | 815 |
| 120.6 | 664 |
| 121.6 | 1745 |
| 122.6 | 632 |
| 123.6 | 686 |
| 124.6 | 940 |
| 125.6 | 897 |