

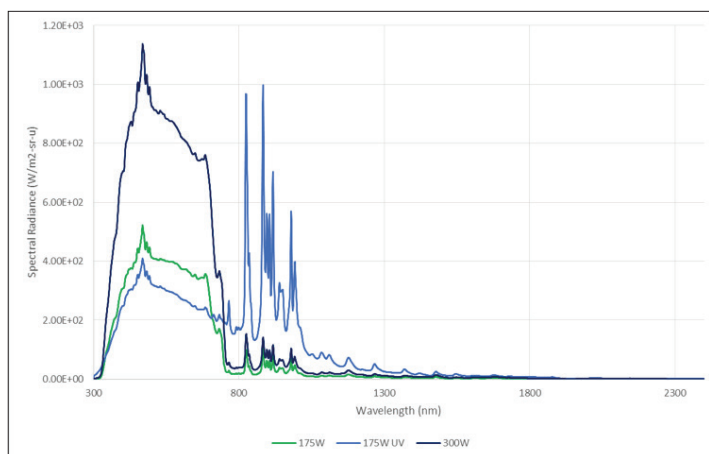
# Xenon (XEL) External Lamp Source



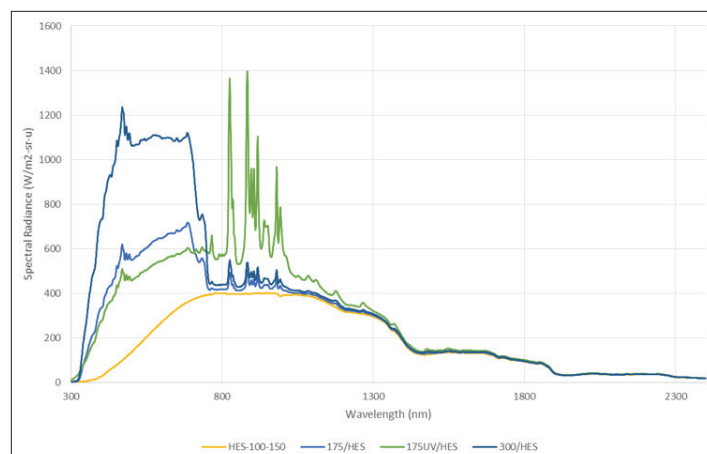
The HELIOS®Plus XEL Xenon External Lamp Series of Discharge Sources is a dynamic high color temperature addition to the HELIOSPlus product line. Xenon has long been known for its ~6000K color temperatures, solar-like spectrum and power-efficient high energy levels. Using XEL sources in combination with the HIS and HES Quartz Tungsten Source Lamps allows for very close spectral match to sunlight and Albedo output levels from 300-2400 nm.

## Features

- 175W and 300W sources with cold mirrors for addition to HELIOSPlus systems
- 175W UV source with cold mirror removed to allow for additional UV input to Spectralon® HSA Spheres. Nitrogen purge NPT adapter accessory included and is recommended to reduce Ozone creation
- Advanced cold mirror technology to suppress unwanted NIR spectral spikes
- Mirror integration tube design to ensure uniform spectral distribution and spatial inputs to HSA Spheres
- A robust carrier chassis that allows easy mounting of the XEL to 12" and 20" HSA Sphere Cages



Spectral Radiance of Xenon in 12" SF Sphere

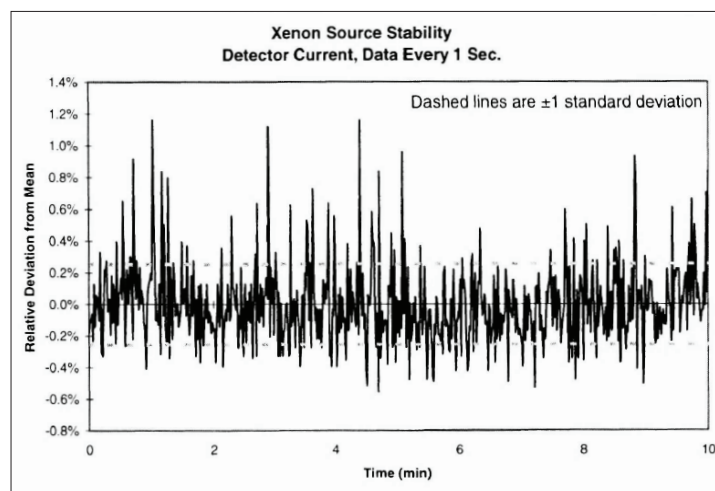


Spectral Radiance of Xenon and QTH in 12" SF Sphere

# Notes on Xenon Stability

## Short Term

Xenon is an arc discharge source and, as such, has inherent instabilities associated with physical movement of the plasma arc between the anode and cathode in the HID bulb. While many of the spatial and angular (convection effects, beam wander, etc) aspects are thoroughly removed by our spheres, inherent electrical flicker is not and shows up as a high frequency effect on the source baseline with a Peak-to-Peak Magnitude of about +/-2% (4% magnitude) and a frequencies of roughly 3-6kHz that can be “seen” by faster camera scan times and frame rates. Labsphere suggests averaging multiple scans or longer exposures to minimize these effects to a RMS of ~0.5%. Artifacts of short term performance are shown below.



Short Term Artifacts of Xenon Lamps

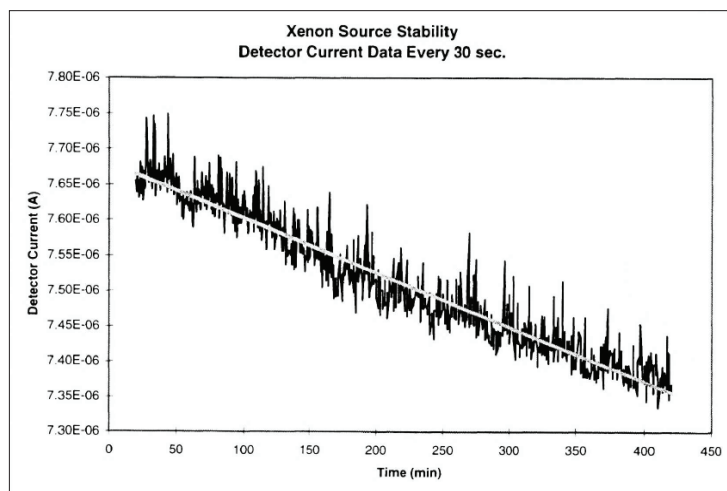
## Specifications

Electrical Power Ratings:	175W, 300W and 175W UV
Models:	XEL-175, XEL-300 and XEL-175UV
Approximate CCT:	175 & 300, 6000K (+200K/-400K); 175UV, 6000K +/-300K
Rated Lifetime:	450 hrs MTBF
Short Term Stability:	+/-2% P-P (4% magnitude), 3-6kHz
Long Term Stability:	30 - 50% Linear Decline over Lifetime
CCT Stability:	Minus 300 - 600K over Lifetime
Rated AC Input/Frequency:	100-240 VAC, 47-63 Hz
Operating Temperature Range:	10 to 50°C
Storage Temperature Range:	-20°C to 70°C
Operating Temperature RH%:	30 - 90% (no condensation)
Storage Temperature RH%:	10 - 95% (no condensation)
Recommended Warm Up Time:	20 minutes
Cooling:	Forced Air Internal Fan
CoC / Test / Cal Report:	Included
Compliance:	CE, RoHS
Replacement Lamp Model:	RLX-175, RLX-300, RLX-175UV
Standard Warranty:	1 year or 200 hours of use

NOTE: Due to the physics of Xenon lamps HELIOSPlus ONLY supports port forward (side facing) orientations.  
Specifications apply to Xe lamps integrated on Labsphere HELIOSPlus systems only.

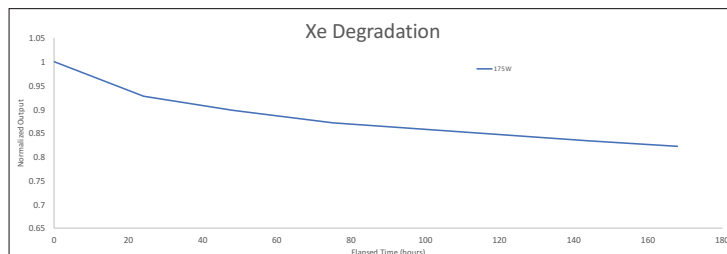
## Long Term

Most of our XEL sources are rated to provide operation of 500 hrs MTBF. Since we are dealing with a HID plasma arc, the tips of the anode and cathode are gradually degraded over time and the arc lengthens. This is apparent to the customer as a reduction in lamp output and a downward shift in color temperature. Lamp output can decay by about 30-50% over the rated MTBF lifetime and is shown below as a linear decline in output. Similarly, the original color temperature of the lamp will drop as a function of this decay with shifts of as much as 400-600K downward drop in CCT. Labsphere recommends frequent recalibration to offset these changes (every 50 hrs or less).

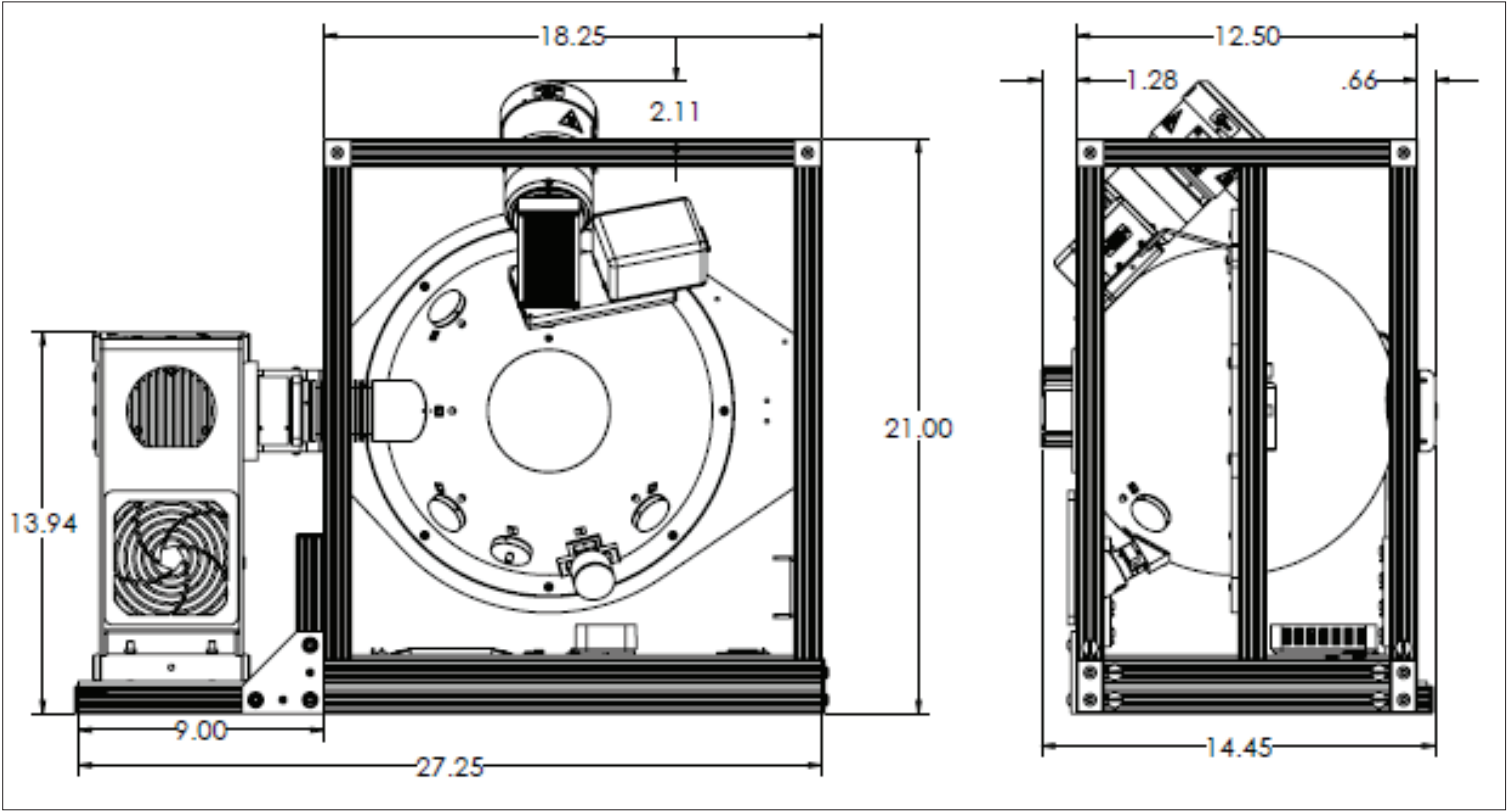


Long Term Decay of Xenon Lamps

The chart below indicates typical lamp lifetime and the rapid decline in output which occurs within the first 25 hours. Due to this, Labsphere characterizes the lamp in the first 50 hours so output is minimally affected over the remaining lifetime of the lamp.



HSA-120 with Xenon Dimensional Drawing



HSA-200 with Xenon Dimensional Drawing

