



K E O S C I E N T I F I C

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## *Keo Alcor-RC* Low Brightness Source



## Keo Alcor-RC Remote Controlled Low Brightness Source

The Keo Scientific *Alcor-RC* Low Brightness Source (LBS) provides a lightweight, portable means of calibrating low-light-level devices such as airglow and auroral imagers and photometers as well as other night-vision devices. Its compact size makes it particularly useful for instruments that must be calibrated *in situ*, such as may be found mounted on aircraft, manned spacecraft, or used in field environments.

The Keo *Alcor-RC* LBS consists of a 100W precision quartz tungsten-halogen bulb mounted in a thermally controlled enclosure. The unit contains a sophisticated system of holographic attenuators, high-grit ground glass, and opal diffusing screens. Overall dimensions (excluding external power supply / control unit) are 8"W x 10.5"H x 17.5" (18.6 lbs), with a 100 mm diameter output screen.

With the opal output diffusing screen in place, the unit serves as a calibrated standard of spectral radiance and as a luminance standard. With the screen removed, the unit can be used as a standard of spectral irradiance and as an illuminance standard.

Conventional incandescent lamps decline as much as 30% in light output during their lifetime, primarily due to bulb darkening from evaporated tungsten deposits. Consequently, a tungsten-halogen was chosen for this LBS. The lamp has a tungsten filament mounted in a quartz envelope containing a small amount of halogen gas. The lamp operates at a high temperature at which the halogen gas combines chemically at the bulb wall with the evaporated tungsten. The resulting tungsten-halogen gas then migrates to the hot filament where it decomposes and deposits tungsten back onto the filament. This cycle continually cleans the bulb so that the lamp maintains over 95% of initial light output throughout its rated lifetime. The spectral distribution from the filament through the quartz envelope in the UV and Visible is essentially the same as a Black Body radiator at the lamp's apparent color temperature of 3000K.

**The Keo *Alcor-RC* LBS comes with a 2-year Warranty, and lifetime free technical and software support via phone, fax, and email.**

### Lamp Features

- Precision quartz halogen lamp
- Pre-focussed filament
- 3000 degrees Kelvin color temperature, for enhanced blue output
- 2000 hours rated lifetime
- Elapsed-time counter (lamp hours)

### Optical Features

- Light attenuation by means of two field stop discs
- Field stop discs controlled via USB interface (GUI control software and SDK provided)
- Micro-EDM precision machined field stop discs
- Internally sandblasted and fully baffled. Black oxidized precision stainless steel field stops
- Total Attenuator Dynamic Range:  $10^6$
- Proprietary combination of holographic diffusers, ground glass, and flashed opal on optical crown
- Uniform Lambertian output
- Comes with spectral radiance and output uniformity calibration

## Electrical

- Power-on sequence: lamp ramps up to full voltage over about 5 seconds, in order to maximize lamp life
- Current drift < 1 mA over 3 hours, after initial 5 minutes warm-up period
- 5 min. warm-up period required to allow bulb, precision resistor, and PSU to fully stabilize
- Power supply operated in remote voltage sense mode
- Bulb over-voltage protection circuitry
- Precision engineered (Swiss-made) LEMO® connectors
- Comes with 25-foot cable between power controller and LBS head. Custom lengths available.
- Mains operating voltage: 110-220 V AC

## Mechanical

- CNC machined, black anodized aluminum
- Sealed, light-tight construction
- Bulb is field replaceable
- Accepts both 100 mm and 4 inch diameter output screens, by means of reversible retaining ring
- Stable rubber-feet desk stand, balanced around center of gravity
- Tripod threads provided for maximum flexibility: ½-20, 3/8-16, and M6



