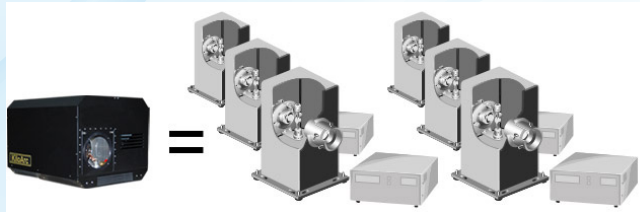


What makes the KiloArc a better Illuminator

ELEMENTAL ANALYSIS
FLUORESCENCE
GRATINGS & OEM SPECTROMETERS
OPTICAL COMPONENTS
CUSTOM SOLUTIONS
PARTICLE CHARACTERIZATION
RAMAN / AFM-RAMAN / TERS
SPECTROSCOPIC ELLIPSOMETRY
SPR IMAGING

The KiloArc™ illumination system delivers the brilliance of 1,000 suns

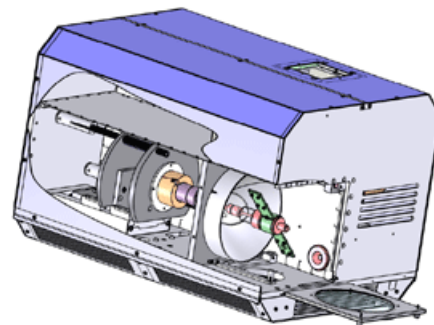
You would have to buy 6 old style vertical arc lamp housings to deliver the same number of photons that a KiloArc™ arc lamp illuminator delivers to a focused spot!



For an equivalent wattage of bulb, the KiloArc™ delivers 5 to 6 times more light emitted by the same bulb, to the secondary focus which is outside the lamp housing! Our design just simply collects a larger solid angle of light than does the old style. That means that an KiloArc™ lamp housing with a 1,000 watt xenon lamp provides the equivalent optical power of a 6,000 watt xenon lamp in an old style vertical lamp housing. And it does so with much greater power density due to a smaller focal spot, and at a small fraction of the cost.

Arc Lamp Housing

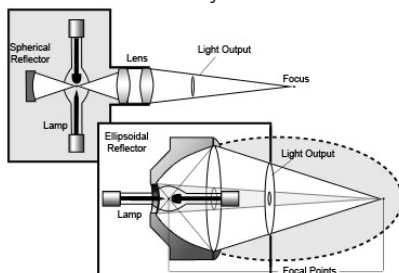
At the heart of every KiloArc™ is a proprietary on-axis ellipsoidal reflector. Our reflectors collect up to 70% of the radiant energy from the arc lamp, versus only 12% for typical condenser systems in vertical lamp housings. The ellipse literally wraps around the arc lamp, collecting 5 to 6 times more output power than from a conventional system.



The arc source is located at one focus points of the ellipse, and the radiation is reflected by the ellipse to the secondary focus which is actually outside of the KiloArc™. Since the light is brought to a focus by reflection rather than refraction (through a lens), there are less losses from absorption or lens-surface back-reflection. This design is so efficient that a Lamp housing can deliver up to 11 times more optical power into a given smaller area than a conventional lamp housing.

Arc Lamp Housing Design; A Better Approach

Users of old style vertical arc lamp housings are throwing away as much as 90% of the lamps output, due to poor collection efficiency. These old style vertical lamp housings have a collection lens in front of the arc lamp and sometimes, but not always, a back reflector behind them. The problem with this old design is that only the light that actually strikes these optical elements is delivered outside of the lamp housing. All other photons emitted by the lamp are wasted, simply heating the inside of the lamp housing. Conversely the unique KiloArc™ lamp housing has an enveloping ellipsoidal reflector that collects virtually all of the light emitted by the lamp arc, delivering those photons to a secondary focal point outside of the lamp housing, and it does so without any lenses.



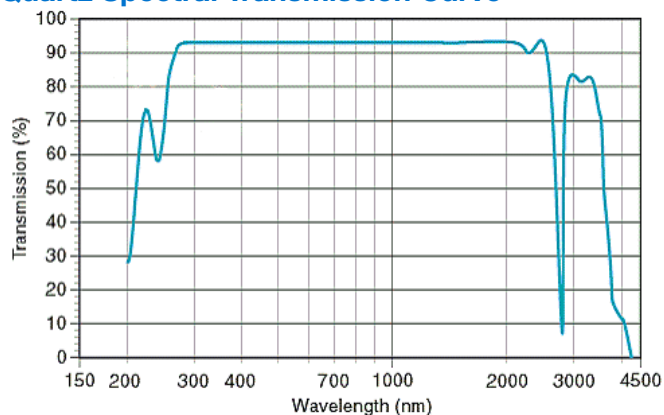
Our ellipsoidal reflectors are proprietary in design and the coating used. They are NOT electro-formed reflectors, which can distort with heat, and can degrade within months. Our proprietary design ensures that distortion of the critical ellipsoid cannot occur as the lamp reaches its operating temperature. This ensures thermal stability of focus. The coating ensures reasonably long operating life, typically 2–3 years.

The KiloArc™ ellipsoidal reflector is an f/4 reflector. The f/# is important when considering matching the KiloArc™ source to some other components like, fiber optics, liquid light guides or monochromators. However f/# for an ellipsoidal reflector is not an indicator of light collection as it is in a simple lens design. The shape and size of the ellipsoidal reflector determines how much light is collected from the lamp arc. The f/# only determines the focal cone angle.

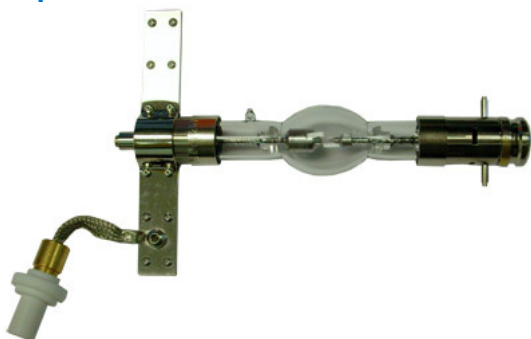
The KiloArc™ is air cooled. However since the system uses ozone free lamps, there is no ozone or venting requirements, although there is an exhaust hose adapter if you want to vent the warm air out of a lab.

The KiloArc™ is a sealed arc lamp housing with a quartz window through which the focused light is delivered. Below is the spectral transmission curve for the quartz window.

Quartz Spectral Transmission Curve



Unique Quick Release Self Aligning Arc Lamp Replacement



You have a choice of two lamps depending on the spectral output that you require; xenon or mercury-xenon. The lamps are provided as a complete pre-aligned assembly

which includes a cooling fin and a quick release self aligning connector. Of course you may order both types of lamps as they are interchangeable.

The xenon gas used in the lamp provides continuous spectra from 180 nm to 2,500 nm at varying intensities. The mercury-xenon provides more of a line spectra. The spectral curves for xenon and mercury-xenon are normalized (relative intensities) therefore, although you cannot tell from the curves, the mercury-xenon lamp actually has greater intensities than the xenon lamp at its various peaks.

The KiloArc™ uses ozone free quartz lamps which cut off the deep UV below 240 nm.

Typical lamp lifetime is 1,500 hrs. The lamp lifetime is highly dependent on operating conditions. Lamps should not be operated above their rated wattage (1,000 W).

Arc Lamp Ignitor

The internal igniter provides a 45 kV pulse for reliable lamp ignition. Ignition noise can disrupt, or even destroy, sensitive equipment in the vicinity of an arc lamp during start-up. This can be quite a concern in a crowded lab environment. Engineers carefully designed and tested the KiloArc's triple shielding housing and electronic filtering to ensure that there is no RF transmitted or radiated out of the illuminator

KiloArc™ Arc Lamp Power Supply and Igniter Specifications

Input	210–240 V AC 50/60 Hz
Starting	45 kV starting pulse
Power Rating	800–1200 watts (adjustable) — recommended 800–1000 watts
Output Volts Compliance	17–23 VDC
Output Current Limit	70 A rms

Smart Features

There are two LED indicators on the back, one called the “STATUS” which shows the modes of operation: cool down, stand by, or error. The other is an ERROR indication. It senses problems and displays error codes when they occur.

Particular considerations were paid to safety. The lamp chamber and power supply are constantly monitored for heat, as well as the airflow for cooling. If there are problems the lamp will shut down automatically and you will receive an appropriate error message. If the access door to the lamp is loose or open the lamp will turn off, or not ignite.

We tried to make the operation as fool proof, safe and reliable as possible, making the KiloArc™ ideal for commercial applications.

Remote Control

As an option available at the time of purchase, the KiloArc™ illuminator may be operated remotely with two different control choices. There is a BNC control accessory and a USB control accessory.

BNC Remote Control: The BNC remote control enhancement of KiloArc™ allows for manual control or remote voltage control. This option adds a BNC control and BNC indicators to the standard manual controls. It includes a manual/remote control switch, 0-5 volts remote control BNC, light on BNC TTL status indicator and error BNC TTL status indicator. With this option the KiloArc can be controlled with the standard manual controls, or switched to remote BNC voltage control.

USB Remote Control: The USB remote control enhancement replaces the standard manual controls with a remote USB control. This option replaces the manual controls with a USB control of on/off and voltage power adjust. It includes a Universal Library and a LabVIEW driver. Manual control of KiloArc™ is not possible with this option.

Arc Lamp Power Supply

The KiloArc™ illuminator has a dedicated 1,000 watt power supply and igniter built into it. The power supply is a high efficiency switch-mode type supply. It is rated at 1,200 watts to ensure that it is not operated at the limit of its range. This provides better stability and longer lifetime when operated at 1,000 W. The KiloArc™ has triple shielding and electronic filtering to ensure that there is no RF transmitted or radiated out of the illuminator to interfere with sensitive equipment, like computers.

4-Inch Exhaust Hose Adaptor

The KiloArc™ does not generate harmful levels of ozone (less than a typical copier) with the standard lamps. However for the optional UV enhanced lamps the KiloArc does generate ozone. For this reason there is 4" hose adaptor on the top of the unit to vent heat and or ozone. Consult with your lab safety officer for proper and safe venting of ozone.



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