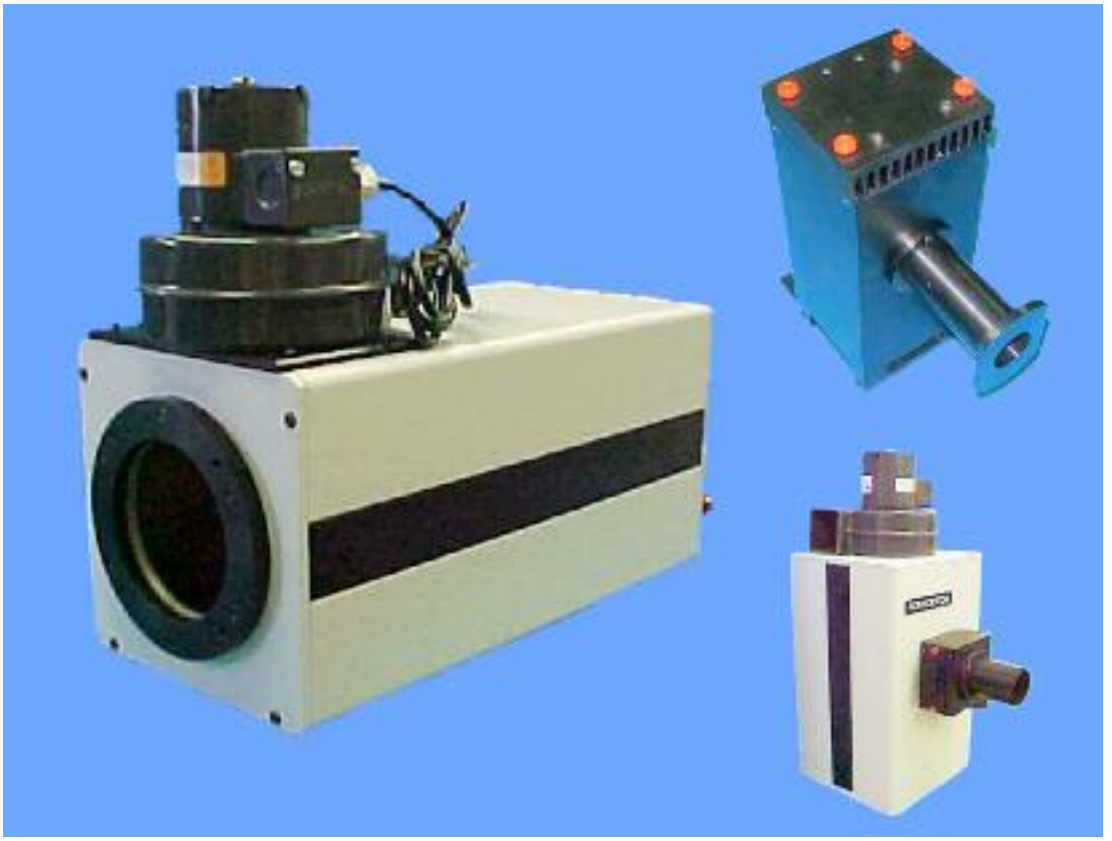
Light Sources



Sciencetech Light Sources

Sciencetech offers light sources from UV to Infrared, from 50 W to 1.6 KW.

A complete light source typically includes the lamp mounted in a housing with condensing/coupling optics, a power supply and all the necessary cables and hardware. For spectroscopic applications, a DC stabilized power supply is required. Arc sources also include a stand alone igniter to break down the gas and establish the plasma discharge. A full line of accessories such as light condensers and collimators, filters, optical feedback units for output stabilization and light shutters are available.

We offer five standard types of sources:

- **Arc**
- **Quartz-Tungsten-Halogen (QTH)**
- **Deuterium & Dual Deuterium-Tungsten**

Arc lamps contain plasma confined in a quartz envelope, which produces radiation from 200nm to 2.5µm. They have a very strong ultraviolet output and, since the emitting plasma volume is very small, their brightness in the visible region is approximately one order of magnitude higher than that of QTH sources, making them excellent for illuminating small targets.

The main arc bulb types are Xenon (Xe), Mercury (Hg), Mercury-Xenon (Hg-Xe) and metal halide under high pressure for maximum brightness. Xenon lamps have a large continuous spectrum with small spectral lines up to 800 nm and very strong emission lines from 800 to 1000 nm. After approximately 1300 nm brightness drops to the same order of magnitude to that of QTH sources due to the quartz envelope. Hg and Hg-Xe are very strong ultraviolet sources. The Hg-Xe lamp has a spectrum similar to Hg but with a higher continuum. Xe and Hg-Xe lamps are available in standard and ozone-free versions.

The bulb envelope of ozone-free lamps is doped with titanium to minimize the ultraviolet (UV) emission below 220 nm. On the other hand, maximum UV emission is produced by bulbs with an envelope of synthetic fused silica instead of standard quartz. They are recommended if a high output in the 180 nm to 220 nm region of the spectrum is required. Metal halide bulbs have a relatively large arc (i.e., lower brightness) compared to high pressure arc lamps but with a high efficiency in the visible region of the spectrum, thus making them better suited for visible illumination of large areas.

Light from QTH lamps is emitted by a heated filament. The filament is enclosed in a quartz envelope filled with gases. The spectral distribution is close to that of a blackbody curve with a colour temperature of approximately 3000°K. QTH lamps have a useful spectral output from 300nm to 2.7µm with several advantages: a smooth spectrum without lines, high output in the visible and infrared regions, high temporal and spatial stability, and inexpensive operation.

QTH lamps are standard for photometric applications since they are much brighter than typical IR sources (SiC, ceramic, etc.).For applications where temporal stability is not critical, the high power models can be AC operated.

The 120 Hz ripple of AC powered high current bulbs (> 5 A) is well under 1%.The main source of instability is line voltage variation.

QTH sources are found on page 3-36. Deuterium (D2) sources are ideal for UV spectroscopy since they have a high ultraviolet output with little visible and infrared emission. UV grade fused silica envelopes can also be used, instead of the standard UV glass envelope, for missions below 180 nm.

A complete deuterium source includes the TH2/D housing with convection cooling, condensing/collimating fused silica optics and a highly stabilized power supply. Dual deuterium-tungsten sources provide a much more extended spectral range from 180 nm to 2.5 µm, making them ideal for UV/VIS/NIR spectroscopy.These sources contain both D2 and QTH lamps and a manual or automatic flipping mirror.

The automated version is driven by a stepper motor. The included controller board and software allow selection of the wavelength at which switching occurs. D2 and Dual Deuterium-Tungsten sources are found on page 3-43. Sciencetech also offers a range of other light sources including calibrated light sources, flash lamps, high throughput UV lamps, and halide lamps.

A fibre optic illuminator is also available. This product is found on page 3-41.

Sciencetech Light Sources Technical Summary:

The following is a brief technical summary of Sciencetech's line of Arc light sources and Quartz Tungsten Halogen light sources. For a more in-depth description and discussion of these light sources, please refer to their respective pages and consult the brochure. If you have any questions or comments, please contact Sciencetech.

Collimated Beam Arc Lamp Housing(50W-200W)

Housing Model	Spectral Range	Optics	Power Supply	Igniter	Cooling
200-100	See Pages 3-6 and 3-7	Ellipsoidal Reflector	550-200	500-IG	Air-Cooled (Water-Cooled, optional)
201-100	See Pages 3-6 and 3-7	Back Spherical Reflector, Refractive Condenser	550-200	500-IG	Air-Cooled

Collimated Beam Arc Lamp Housing(450W-1600W)

Housing Model	Spectral Range	Optics	Power supply (Built-in-Igniter)	Cooling
200-1K	See Pages 3-6 and 3-7	Ellipsoidal Reflector	500-500(350-500W) 500-1K(800-1200W) 500-1.6K(1000-1900W)	Air-Cooled (Water-Cooled Optional)
201-1K	See Pages 3-6 and 3-7	Back Spherical Refletor, Refractive Condenser	500-500(350-500W) 500-1K(800-1200W)	Air-Cooled (Water-Cooled Optional)

Quartz Tungsten Halogen (QTH) Lamp Housing (50, 100, 250 and 1000W)

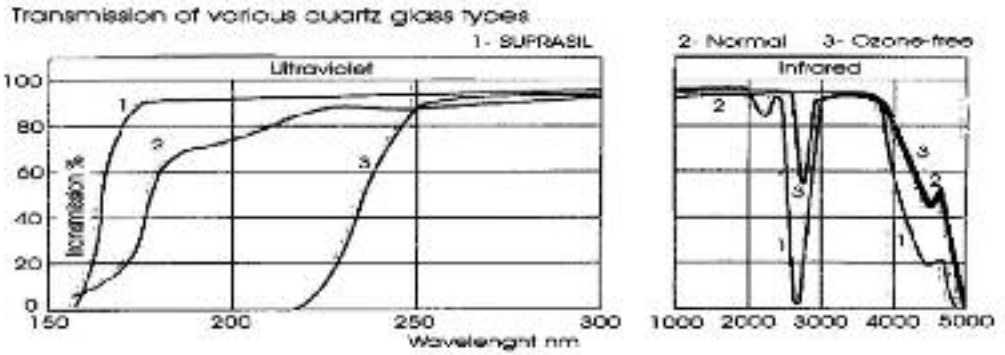
Housing Model	Spectral Range	Optics	Power Supply	Cooling
TH3	See Page 3-37	Back Spherical Reflector, Refractive Condenser	DC stabilized	Air-Cooled

High Efficiency QTH Fibre Optic Illuminator

Housing Model	Spectral Range	Optics	Power Supply	Cooling
FB- QTH-3	See Page 3-37	Ellipsoidal Reflector	150W DC	

Deuterium and Dual Deuterium-Tungsten Sources

Source Type	Housing Model	Spectral Range	Optics	Power Supply	Cooling
D2	TH3	See Page 3-43	Back Spherical Reflector	500-D230	Convection
D2-QTH	TH3	See Page3-37 & 3-43	Reflective/Refractive Optics	500-D230 & 500-QTH30	Convection



Selection of Spectral Light Sources and/or accompanying optics may be based upon these curves

Optical Radiation Terminology and Units

There are many systems of units for optical radiation. In this catalogue we try to adhere to the internationally agreed CIE system. The CIE system fits well with the S1 system of units. We mostly work with the units familiar to those working in the IJV to near IR. We have limited the first part of this discussion to steady state conditions, essentially neglecting dependence on time.

Radiometric, Photometric and Photon Quantities

The emphasis in our catalogue is on radiometric quantities. These are purely physical. The optical radiation recorded by the human eye is often more relevant than the absolute physical values. This evaluation is described in photometric units and is limited to the small part of the spectrum called the visible spectrum. Photon quantities are important for many physical processes.

Units for Spectral Irradiance Used in this Catalog

In this catalog we use mW m^{-2} nm^{-1} as our preferred units for spectral irradiance. Conversion to other units, such as mWm^{-2} pM^{-1}, is straightforward. For example: The spectral irradiance at 0.5 m from our 6333 100 waft QTH lamp is 12.2 mWm^{-2} nm^{-1} at 480 nm. This is:

0.0122 W m^{-2} nm^{-1}

1.22 µW cm^{-2} nm^{-1}

all at 0.48 µm and 0.5 m distance.

With all spectral irradiance data or plots, the measurement parameters, particularly the source-measurement plane distance, must be specified. Values cited in this catalogue for lamps imply the direction of maximum radiance and at the specified distance.

Wavelength, Wave Number, Frequency and Photon Energy

This catalogue uses “wavelength” as a spectral parameter. Wavelength is inversely proportional to the photon energy; shorter wavelength photons are more energetic photons. Wave number and frequency increase with photon energy. The units of wavelength we use are nanometers (nm) and micrometers (µm) (or the common, but incorrect version, microns).

1 nm = 10^{-9} m = 10^{-3} µm

1 pm = 10^{-12} m = 10^{-3} nm

1 Angstrom unit (Å) = 10^{-10} m = 10^{-1} nm

Irradiance: Spatial Dependence

Irradiance and most other radiometric quantities have values defined at a point, even though the units, mW m^{-2} nm^{-1}, imply a large area. The full description requires the spatial map of the irradiance. Often average values over a defined area are most useful Peak levels can greatly exceed average values.

Converting from Radiometric to Photon Quantities

Expressing radiation in photon quantities is important when the results of irradiation are described in terms of cross section, number of molecules excited, or for many detector and energy conversion systems, quantum efficiency.

Monochromatic Radiation

Calculating the number of photons in a joule of monochromatic light of wavelength X is straightforward since the energy in each photon is given by:

$E = hc/X$ joules

Where:

h = Planck’s constant (6.626×10^{-34} Js)

c = Speed of light (2.998×10^{8} m/s)

λ = Wavelength in m

So the number of photons per joule is:

$N_{p\lambda} = \lambda \times 5.03 \times 10^{15}$ where λ, is in nm (*)

Since a watt is a joule per second, one watt of monochromatic radiation at **k** corresponds to $N_{p\lambda}$ photons per second. The general expression is:

$$dN_{p\lambda}/dt = P\lambda \times \lambda \times 5.03 \times 10^{15}$$

where Pλ is in watts, λ is in nm

Similarly, you can easily calculate photon irradiance by dividing by the beam impact area.

(*) We have changed from a fundamental expression where quantities are in base SI units, to the derived expression for everyday use

What is the output of a 2mW (632.8 nm) HeNe laser in photons per second?

2 mW = 2×10^{-3} W

$\Phi_P = 2 \times 10^{-3} \times 632.8 \times 5.03 \times 10^{15}$

$= 6.37 \times 10^{15}$ photons/second

Broadband Radiation

To convert from radiometric to photon quantities, you need to know the spectral distribution of the radiation. For irradiance you need to know the dependence of $E_{e\lambda}$ on λ. You then obtain the photon flux curve by converting the irradiance at each wavelength as shown above.

Converting from Radiometric to Photometric Values

You can convert from radiometric terms to the matching photometric quantity. The photometric measure depends on how the source appears to the human eye. This means that the variation of eye response with wavelength, and the spectrum of the radiation, determines the photometric value. Invisible sources have no luminance, so a very intense ultraviolet or infrared source registers no reading on a photometer.

Radiometric			Photometric			Photon		
Quantity	Usual Symbol	Units	Quantity	Usual Symbol	Units	Quantity	Usual Symbol	Units
Radiant Energy	Qe	J	Luminous Energy	Qv	lm s	Photon Energy	Np	*
Radiant Power or Flux	Φe	W	Luminous Flux	Φv	lm	Photon Flux	Φp=dNp/dt	s^{-1}
Radiant Exitance or Emittance	Me	Wm^{-2}	Luminous Exitance or Emittance	Mv	lm m^{-2}	Photon Exitance	Mp	s^{-1} m^{-2}
Irradiance	Ee	Wm^{-2}	Illuminance	Ev	lx	Photon Irradiance	Ep	s^{-1} m^{-2}
Radiant Intensity	Ie	Wsr^{-1}	Luminous Intensity	Iv	cd	Photon Intensity	Ip	s^{-1} sr^{-1}
Radiance	Le	Wsr^{-1} m^{-2}	Luminance	Lv	cd m^{-2}	Photon Radiance	Lp	s^{-1} sr^{-1} m^{-2}

Table 1 - Commonly Used Radiometric, Photometric, and Photon Quantities.

Photon quantities are expressed in number of photons followed by the unit, e.g. photon flux (number of photons) s^{-1}. The unit for photon energy is number of photons. The subscripts e, v, and p designate radiometric, photometric, and photon quantities respectively. They are usually omitted when working with only one type of quantity.

Units	Equivalent	Quantity
Talbot	lm s	Luminous Energy
Footcandle	lm ft^{-2}	Illuminance
Footlambert	cd ft^{-2}	Luminance
Lambert	cd cm^{-2}	Luminance

Symbols Key	
J: joule	lm: lumen
W: watts	s: second
m: metre	cd: candela
sr: steradian	lx: lux, lumen m^{-2}

Spectral Distribution

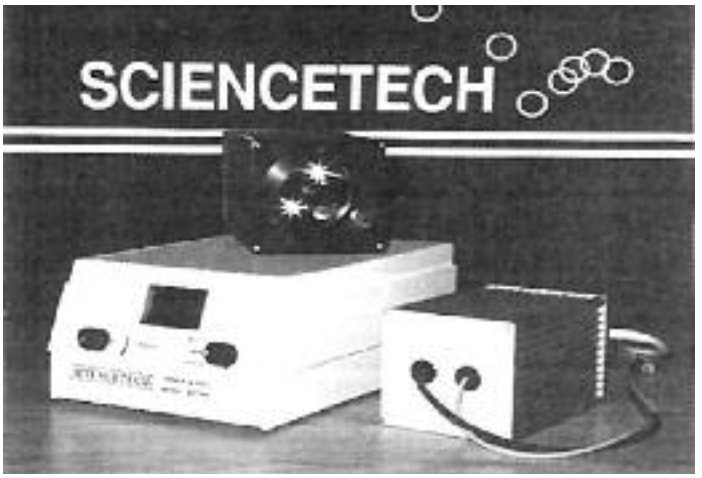
"Spectral" used before the tabulated radiometric quantity implies consideration of the wavelength dependence of the quantity. The measurement wavelength should be given when a spectral radiometric value is quoted. The variation of spectral radiant exitance (Meλ) or irradiance (Eeλ) with wavelength is often shown in a spectral distribution curve.

Spectral Units Conversion

	Wavelength	Wave number*	Frequency	Photon Energy**
Symbol (Units)	λ (nm)	υ (cm^{-1})	ν (Hz)	Ep (eV)
Conversion Factors	λ	$10^7/\lambda$	$3 \times 10^{17}/\lambda$	$1{,}240/\lambda$
	$10^7/\upsilon$	υ	$3 \times 10^{10}\ \upsilon$	$1.24 \times 10^{-4}\ \upsilon$
	$3 \times 10^{17}/\nu$	$3.33 \times 10^{-11}\ \nu$	ν	$4.1 \times 10^{-15}\ \nu$
	1,240/Ep	8,056 x Ep	2.42×10^{14}Ep	Ep
Conversion Examples	200	5×10^4	1.5×10^{15}	6.20
	500	5×10^4	6×10^{14}	2.48
	1000	10^4	3×10^{14}	1.24

When you use this table, remember that applicable wavelength units are nm, wave number units are cm^{-1}, etc. * The S.I. unit is m^{-1}. Most users adhere to cm^{-1}. ** Photon energy is usually expressed in electron volts to relate to chemical bond strengths.

Arc Light Sources



Sciencetech 500-200 Power Supply, Igniter and 200 series Arc Lamp Housing

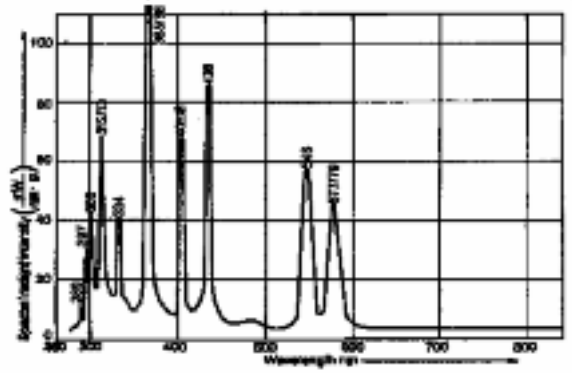
Arc lamps are very strong sources of ultraviolet and visible light. They are excellent point sources of high brightness due to their small arcs. This feature makes arc sources a good choice when precise collimation is required. Arc light sources are also good choices for fibre optic applications, which require high intensity light focused on a very small point.

Sciencetech offers a full line of arc lamp systems consisting of lamps, housing, power supplies, and accessories for spectroscopy, fluorescence, solar simulation, and other scientific applications. Sciencetech light sources are also used as part of Photodynamic Therapy Illumination systems. Sciencetech arc lamp systems are offered in two ranges:

- Arc lamps up to 200 W
- Arc lamps from 500 W to 1.6 kW

Sciencetech arc lamp systems allow the use of Xenon, Mercury, and Mercury-Xenon arc lamps. The arc lamps can be operated in two types of housing, which differ in the condensing system:

- Wrap around ellipsoidal reflector for focused beam
- Refractive condensers for collimated beam



Spectral distribution of radiant intensity for a 200 W Mercury lamp at rated power.

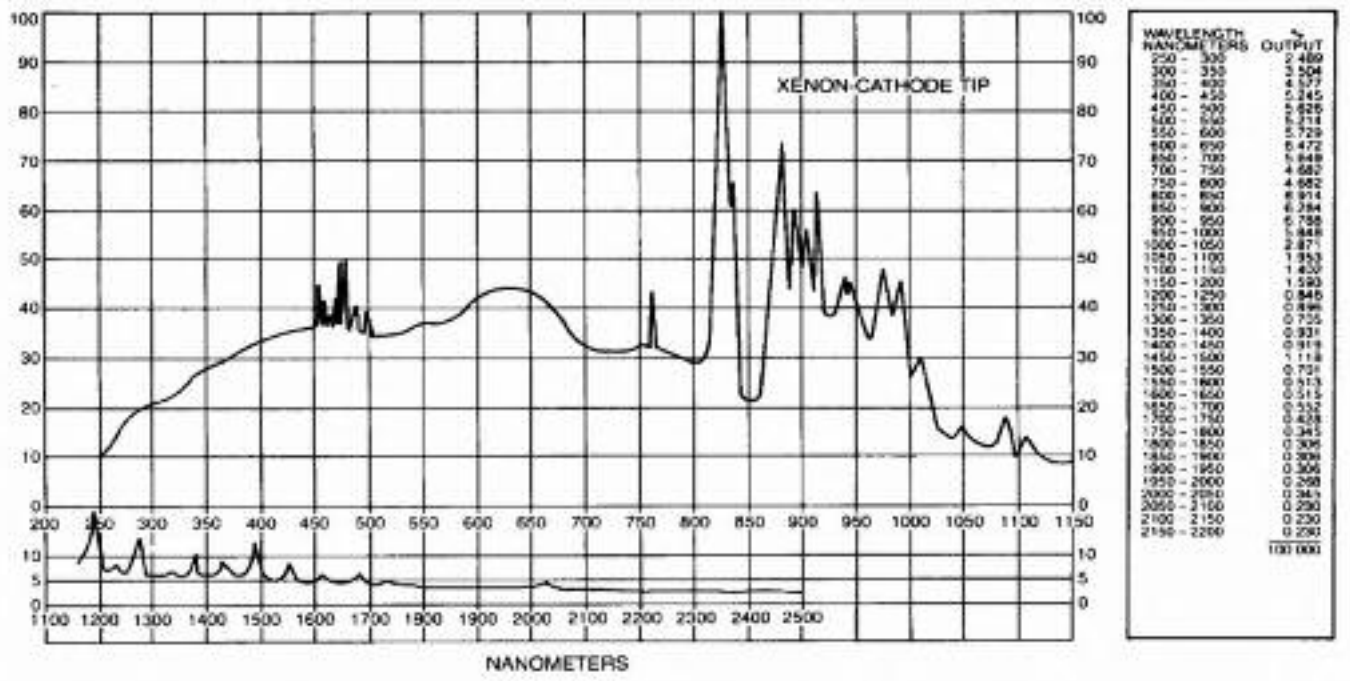
An ellipsoidal reflector collects as much as 60% of the radiation of the source at its first focus and refocuses it at the second focus where the desired object to be illuminated (i.e. the entrance slit of a monochromator) is positioned. Sources using this type of light collection have the advantage of not requiring additional focusing optics. Since no refractive components are present, there are no chromatic aberrations or wavelength cutoffs determined by the material. We recommend this housing for use with monochromators, fibre bundles, or in any other situation in which condensing in an area over 5 mm is acceptable. The main disadvantage of the ellipsoidal reflector housing is the relatively large spot produced and, for some applications, the need of recirculated water cooling. For fibre optics and other applications that require imaging of the arc onto a very small focal point for maximum brightness, refractive condensing systems work better than ellipsoidal reflectors and increase the coupled light by a factor of approximately two. Sciencetech offers light sources that include a back spherical reflector and a variety of refractive condensers. In the visible/NIR range we have one to four element condensers including PCX lenses, aspheric, achromats etc. In the next few pages we include more detailed information about arc lamp housing and power supplies. Sciencetech also offers a full assortment of lamp accessories, such as stands, mounts, filters, infrared water filters, fibre optic adapters, coupling tubes, and many other products described both in this section and the Accessories section.

Mercury Lines in the Arc Spectrum

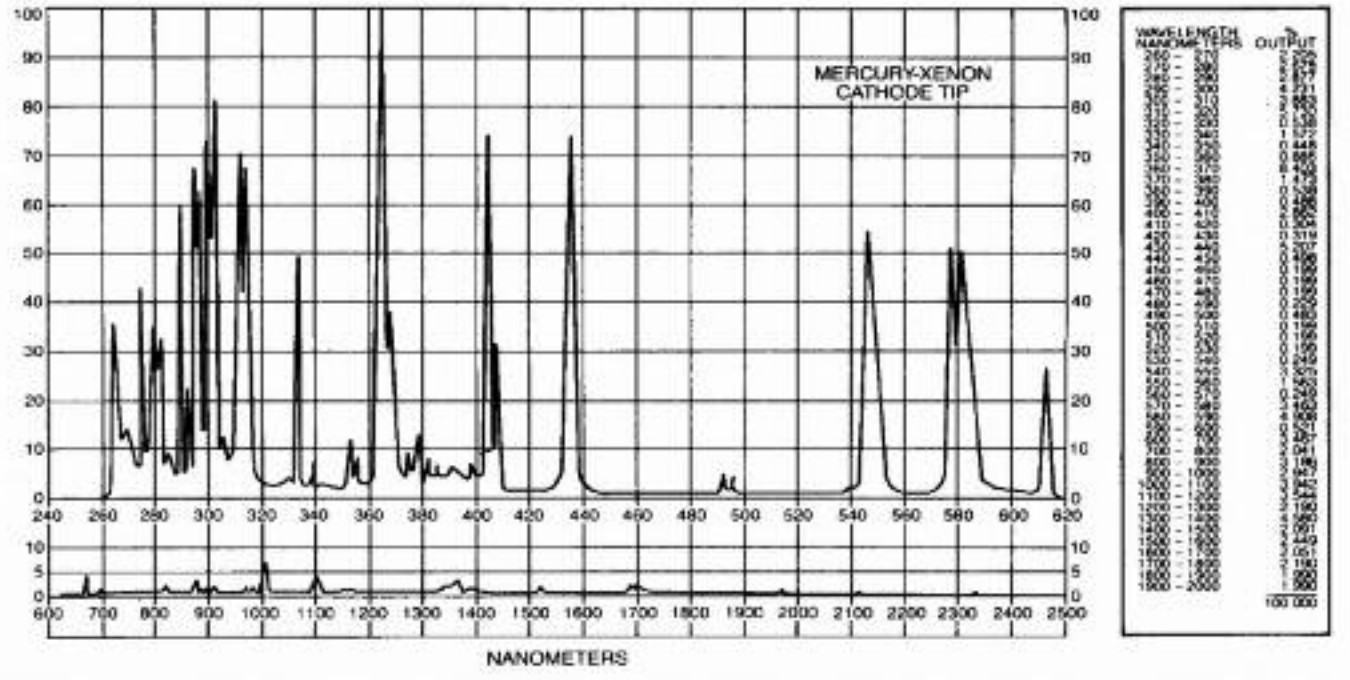
Wavelengths in nm/ relative intensity			
1013.98/7	819.56/8	434.75/6	270.24/–
999.90/4	817.22/3	433.92/6	269.88/4
998.09/7	816.58/5	416.09/–	265.51/3
996.90/9	816.33/5	417.80/–	265.36/3
994.31/4	807.03/3	414.03/–	265.20/5
983.81/6	802.23/5	410.80/4	257.21/–
952.62/5	794.46/–	407.78/5	253.65/10
949.58/8	782.12/6	404.67/8	253.47/4
944.28/7	772.85/8	404.65/8	248.27/3
943.83/7	767.44/5	398.39/4	248.20/3
943.21/7	760.25/3	390.64/5	241.41/–
942.56/8	755.27/3	390.47/–	240.73/–
933.84/6	755.18/4	366.32/8	239.97/3
929.65/3	748.58/–	366.28/6	237.83/3
925.39/6	736.71/3	365.48/7	231.52/–
924.31/7	709.19/7	365.01/9	231.43/–
899.14/5	708.19/8	363.83/3	230.64/–
896.89/6	690.71/8	334.14/8	230.35/–
897.37/6	671.61/6	333.21/2	228.96/4
889.37/5	623.43/5	313.18/7	226.22/–
878.37/3	612.34/4	313.15/6	226.02/–
877.85/5	607.26/4	312.56/8	225.27/–
877.31/8	579.06/9	302.15/10	224.44/–
876.30/7	576.96/9	296.76/8	223.00/–
875.81/7	567.59/5	296.74/2	222.47/4
875.19/5	546.07/10	289.36/5	222.41/3
870.30/3	500.12/–	266.03/–	222.44/–
865.27/6	496.05/–	284.76/–	219.07/–
854.82/–	497.37/–	281.49/–	214.80/–
850.55/5	486.03/4	280.35/4	205.29/–
840.16/5	491.60/8	276.19/–	202.69/–
820.08/5	435.83/9	275.27/4	202.22/–

Spectral Emission Curves

Spectral Emission for Xenon Compact Arc Lamps



Spectral Emission for Mercury-Xenon Compact Arc Lamps



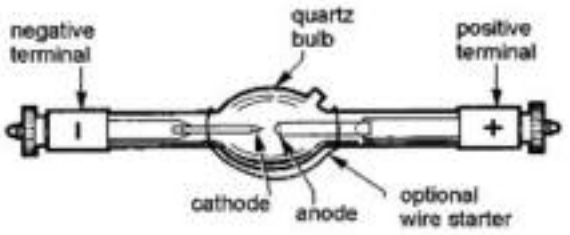
Arc Lamp Overview

Sciencetech offers a selection of Xenon, Mercury and Mercury-Xenon short arc lamps. Short arc lamps are DC operated high pressure discharge lamps. These lamps are especially suitable for optical applications because of their high radiance and luminance. Light is generated by a discharge arc burning freely between two electrodes. The length of the arc is determined by the distance between the two electrodes, which is usually only a few millimeters. This makes arc lamps an ideal point source of light.

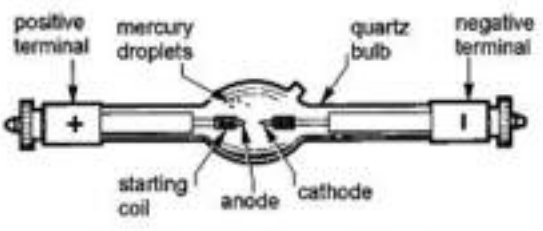
Construction:

Arc lamps consist of an anode and cathode sealed in a clear glass envelope. Quartz is used for the glass envelope because of its mechanical and thermal durability. The quartz bulb of the lamp is shaped in such a way as to minimize the effects of the thermal gradients and shock associated with the operation of the lamp. The tip of the bulb is sealed off. The electrodes in the lamp are hermetically sealed into the discharge vessel. The electrodes are diametrically opposed with a short gap between them. Electrodes are made of tungsten, which facilitate the task of the cathode: supplying the current (electrons). The smaller electrode is the cathode, which has a very sharp point to help enhance the emission of electrons. The anode is larger, designed to withstand the number of electrons that bombard it, which creates a large amount of heat to be dissipated. Xenon lamps are filled with pure xenon gas at very high pressure. Mercury lamps contain a small amount of argon gas (Mercury lamps) or xenon gas (Mercury and Mercury-Xenon lamps) and a measured amount of mercury.

The figures below illustrate the general components of arc lamps.



1. Xenon lamp components



2. Mercury lamp components

Selection of lamps:

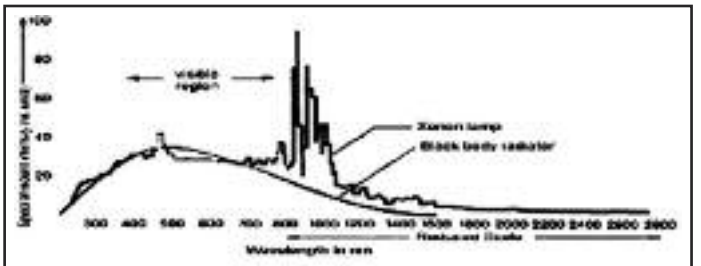
Lamps can be selected by identifying the wavelength range and area of illumination required.

Mercury and Mercury-Xenon lamps provide intense broad line output in the UV region (see spectral curves on pages 3-7 and 3-8). Xenon lamps provide a wider range of wavelengths. High power lamps generally provide good illumination of large targets and lower power lamps provide excellent illumination of targets with small dimensions. Refer to the arc size and the total flux of the lamps in the technical specifications section on the following pages.

Powering arc lamps:

Arc lamps require high voltage sparks for ignition as well as a carefully regulated current for operation. Ignitors provide the high voltage sparks required for ignition. Power supplies designed for use with arc lamps provide the regulated current.

Sciencetech offers both power supplies with integral igniters and power supplies that require a stand-alone ignitor. Arc lamp power supplies can be found on pages 3-20 to 3-22.

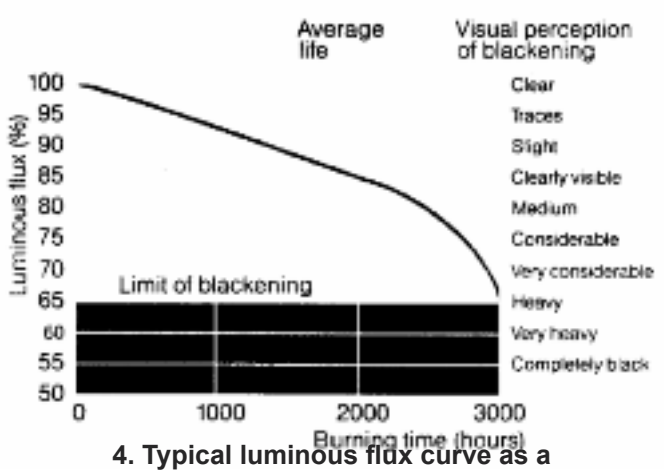


3. Spectral distribution of radiant intensity of a typical Xenon lamp and a 6200K black body radiator (Given below)

Lamp lifetime:

Lamp lifetime generally means the length of time the lamp operates until a 30% reduction in luminous flux is reached. Some factors that reduce lamp life are over-current and undercurrent, high current ripple, tilt (unfavourable burning position), incorrect magnetic arc stabilization, and inadequate cooling. The most important factor limiting lamp life is the blackening of the lamp bulb by the tungsten of the electrodes gradually vaporizing and being deposited on the bulb. Blackening of the bulb reduces light transmitted from the bulb and increases the heat the quartz is subjected to because of absorption of radiation. The spectral characteristics of the light also change slightly as blackening continues. Thin layers of tungsten mainly absorb UV radiation and the blue region of the spectrum, so the light from blackening bulbs becomes increasingly yellow. The average lifetimes outlined in the technical specifications of the arc lamps are based upon running the lamp for 30 minutes between ignitions. Frequent ignitions can also reduce lamp life.

It is important to replace arc lamps after exceeding the average lifetime by 25%, even if no significant blackening is apparent.

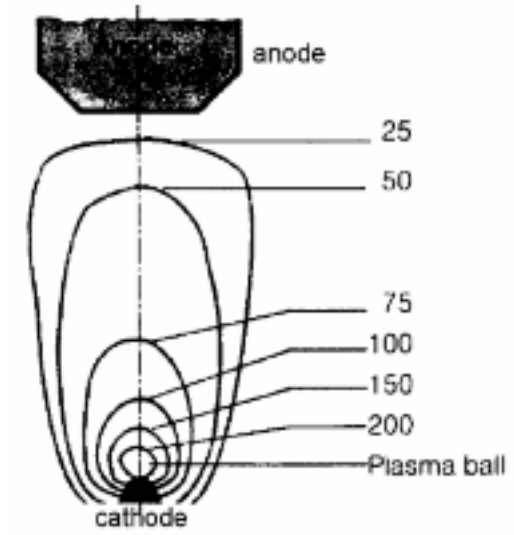


4. Typical luminous flux curve as a function of burning time

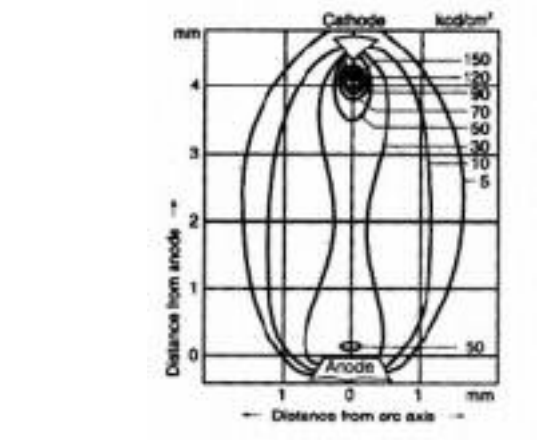
After the average lifetime has been exceeded by 25%, the quartz glass has usually re-crystallized to such an extent that there is an increased risk of bursting.

Arc Brightness Maps

The figures below show the typical contours for xenon and mercury lamps. Concentration areas may be imaged into very small targets, providing excellent illumination.



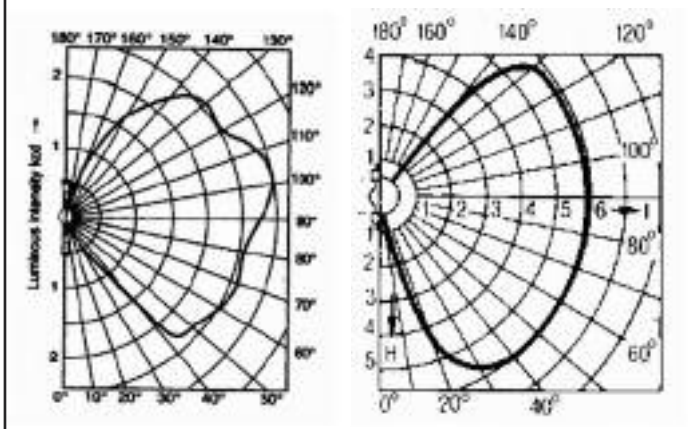
5. Arc brightness distribution of a Xenon lamp, showing lines of equal luminance in kcd/cm²



6. Arc brightness distribution of a Mercury lamp, showing lines of equal luminance in kcd/cm²

Distribution of Luminous Intensity

The figures below show typical luminous intensity distributions for xenon and mercury lamps. Mercury-Xenon lamps have a similar distribution to Xenon lamps.



(a) 500W **(b) 1.5kW**

7. Typical luminous intensity distribution of (a) 500 W Mercury arc lamp; (b) 1.5 kW Xenon arc lamp. (Luminous intensity in kcd)

Collimated Beam Arc Lamp Housing (50W~200W)

Highlights

- Scientific Research Grade Arc Lamp Housing
- Collimated Uniform 1 Inch Diameter Output Beam
- Supports 75W~200W Arc Lamps
- Supports Xenon, Mercury, & Mercury-Xenon Arc Lamps
- Forced Air-Cooled
- Available Refractive Condensing Optics Attachments
- Available Variable Power Supply with Optical Feedback
- Vertically Mounted Arc Lamp
- Side Exit Port with Back Spherical Reflector

The Model 201-100 arc lamp housing produces a collimated 1 inch diameter uniform beam (parallel rays) at the exit port. This allows for the attachment of refractive condensing optics (sold separately) to refocus the output light onto a very fine focal point for maximum brightness. This is ideal for fibre optic applications where the light needs to be condensed into a small entrance of a fibre bundle. The Model 201-100 is designed for 75W~200W Xenon, Mercury-Xenon, and Mercury short arc lamps (sold separately). The housing is forced air-cooled with the arc lamp mounted in a vertical position. The exit port collects light from the side of the arc lamp with a back mounted spherical reflector to double light collection. Please specify arc lamp wattage and type at time of ordering as the lamp socket and cooling shroud is specific to the selected arc lamp.

Optical Configuration

The arc lamp is mounted in a vertical position with the exit port on the side wall. A back spherical reflector mounted on adjustable alignment pins redirects the rear illumination to the forward exit port, thereby doubling the amount of light collected. However, this configuration is still not as effective as the ellipsoidal reflector based arc lamp housing (Models 200-100 and 200-1K) system in light collection although it does produce a more uniform beam.

Beam Collimation

A 1 inch diameter collimating lens is mounted at the exit port of the arc lamp housing to produce near parallel output rays (f/1.5). This lens is made of borosilicate glass and filters the most harmful UV rays below 360nm. For UV applications, this lens can be replaced with a fused silica version which allows all wavelengths including UV light above 200nm to pass through. Please see “1 Inch Fused Silica Lens Upgrade” accessory for details.

Focusing Optics

Refractive condensing optics can be attached to the exit port of the Model 201-100 arc lamp housing to focus the light into a fine focal spot (Please see “1 inch Diameter Beam Coupling Optics Selection” Group Accessories for details). The refractive condensing optics are actually better at condensing light onto a smaller spot than ellipsoidal reflector based optics like the Model 200-100 and 200-1K arc lamp housings. More importantly, the refractive condensing optics can be set to any aperture value allowing it to better match the f number of the device it is illuminating for maximum light transfer efficiency. Ellipsoidal reflector-based optics on the other hand, have a fixed aperture and therefore cannot match the f number of any illuminated device for maximum light transfer efficiency.

Air Cooled

The Model 201-100 has a forced air-cooled fan that draws air from the bottom of the housing and blows it out the top.

Version Description	Version Code	Version Price (USD)
For Xe Lamps	-1inchXe	—
For HgXe Lamps	-1inchHgXe	
For Hg Lamps	-1inchHg	

Optical Beam Height

The centre beam line of the exit port is 114.3mm above the base of the lamp housing. This can be too high for some optical systems. To lower the centre beam line, the arc lamp housing can be rotated 90 degrees about its exit port such that it lies horizontally. An optional horizontal mounting bracket is available for this purpose. However, a horizontally operated lamp is not recommended for mercury or mercury-xenon lamps as it shortens the lamp's service life.

Supported Arc Lamps

The Model 201-100 supports 75W~200W short arc lamps which are sold separately. Please see "Arc Lamp Selection" in group accessories for a range of available xenon, mercury-xenon, and mercury arc lamps. Since each arc lamp type and wattage has its own socket style and cooling shroud requirement, it must be specified at the time of ordering. The arc lamp housing will not be able support another type or wattage of arc lamp after it is manufactured

Power Supply

The Model 201-100 arc lamp housing is designed to work with Sciencetech Model 550-200 adjustable power supply and Model 500-IG igniter (sold separately). This power supply is a highly stabilized linear DC power supply that can be manually adjusted from 0W to 200W. An optional Optical Feedback Unit (Model FS-02) with a built-in light sensor is available to monitor the light intensity of the arc lamp and automatically adjust the power supply to maintain a consistent non-fluctuating intensity. The Model 201-100 arc lamp housing can also be used with other DC arc lamp power supplies as long as the power supply provides both DC output for lamp and 120VAC output for its cooling fan. The power supply must also have its own arc lamp ignition.

Other Arc Lamp Housing Models

Please consider the Model 201-1K arc lamp housing for higher wattage lamps between 500W~1000W. The Model 201-1K has the same vertical mount design and collimated output beam as the Model 201-100, but is designed for high power lamps with a 2 inch diameter output beam. Also available is the Model 200-100 arc lamp housing that utilizes an ellipsoidal reflector optical system for greater light collection ability. The Model 200-100 supports the same set of 75W~200W arc lamps and is compatible with the same Model 550-200 adjustable power supply. However, the Model 200-100 ellipsoidal reflector has a fixed f/4.5 aperture and its beam is not nearly as uniform as the Model 201-100.

Customization

Sciencetech has built many customized versions of the Model 200-100 arc lamp housing. Examples include a water cooled version, a 2 inch diameter output beam version, and a horizontally mounted version to lower its optical beam height to match that of a table top system. If you require a certain feature in this arc lamp housing that is not shown, please contact our Applications specialist at sales@sciencetech-inc.com for a custom quotation.

ACCESSORIES

1 Inch Fused Silica Lens Upgrade (for UV applications) (CON1-1L) $ USD

A single 1 inch borosilicate glass collimating lens at the exit port is standard on the Model 201-100 arc lamp housing. This lens not only improves light collection efficiency to f/1, but also acts as a safety window should the high pressure arc lamp inside the housing explode. This glass lens also filters harmful UV rays while allowing visible and IR light to pass through (λ>360nm). For UV applications, the glass lens must be upgraded to fused silica to allow UV wavelengths (λ>200nm) to pass through as well. Please note that some UV lamps produce dangerous levels of ozone, and thus such a lens is also useful to help contain it inside the housing.

Horizontal Mounting Bracket (201-100-HM) $ USD

The Model 200-100 arc lamp housing can be rotated 90 degrees about its exit port such that the arc lamp lies horizontally instead of vertically. This is useful in lowering the optical beam centre line to match the optical centre line of an optical system. The Horizontal Mounting Bracket has adjustable height legs to support 5", 4" and 3" optical centre line heights. The horizontal bracket is essentially an "L" shape bracket. Please note that Mercury and Mercury-Xenon lamps should not be operated horizontally, otherwise their service life would get shortened significantly.

Calibrated Light Source (CalibLight) $ USD

This is a calibration service that documents this particular unit's spectral characteristic of the lamp with reference to NIST (U.S.) or NPL (U.K.) standard. Realistically, this service should be purchased with an entire light source system including arc lamp housing and power supply to assure a constant reference condition.

200W Adjustable Power Supply for Arc Lamps (550-200) $ USD

The Sciencetech 500-200 series of DC power supplies deliver power for lamps up to 200 W. They can drive lamps with a voltage of up to 30V and a current of up to 10A. A digital LCD display, located on the front panel, indicates either current, voltage or power. These power supplies are fully adjustable from 0W to 200W and offer a protected output against short circuit or abnormal operating conditions.

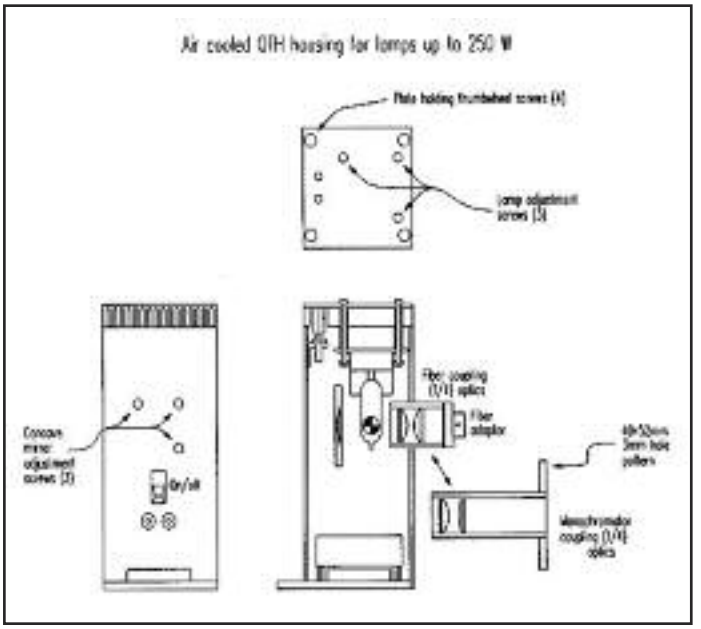
Arc Lamp Igniter (for use with Model 500-200 and 550-200 Power Supplies) (500-IG) $ USD

The Sciencetech Model 500-200 and 550-200 Power Supplies require this mandatory Model 500-IG external ignitor for starting arc lamps. This ignitor is connected in series to the Model 500-200 Power Supply and automatically generates a 20kV spike to ignite the arc lamp. The ignitor can detect the presence of an arc lamp and will automatically try to ignite it up to 5 times once the power supply has been turned on.

Optical Feedback Unit
(FS-02) $ USD

Technical Specifications

- 1 inch (25mm) diameter exit port, with f/1.5 collimating lens
- Removable top for lamp replacement
- Three point adjustable pins for back spherical reflector alignment
- Aluminum body, black anodized
- + and - terminals for arc lamp power (12DC~35DC typical)
- Live and neutral terminals for cooling fan (115~120VAC)
- Available refractive condensing optics attachments
- Distance centre of lamp to exit port: 30mm
- Center beam line height: 114.3mm (4.5") above base
- Dimensions: 101.6mm x 101.6mm x 224mm (4" x 4" x 8.815")



Group Accessories

Please check the appropriate sections in the catalogue for the following:

75~200W Arc Lamp Selection	**(Arc Lamps2)**
1 Inch Diameter Beam Coupling Optics Selection	**(Light Coupling1 In)**
Custom 2 Inch Beam Diameter Upgrade	**(Light Coupling2 In)**

75W~200W ARC LAMP SELECTION

75W Xenon - Sciencetech arc lamp housing
Ver. (code: 10075X) $ USD

75W Xenon arc lamp, 14V, 5.4A, 100cd, 400cd/mm^2, Avg. life 400 hours, length 90mm

75 W Xenon, Ozone-Free, small bright arc -
Ver. (code: 10075XOF) $ USD

75W Xenon arc lamp, 14V 5.4A, 100cd, 400cd/mm^2, Avg. life 400 hours, length 90mm

75W Xenon, long life, high stability, Standard or Ozone-Free - Ver. (code: 10075XLL) $ USD

This is a short arc Xenon (Xe) lamp designed to work with Sciencetech's Model 201-100 or Model 200/210 Arc Lamp housings. The corresponding power supply with these housings is Sciencetech's Model 500-200 variable control DC linear power supply (50W~200W) with separate Model 500-IG ignitor.
Specifications 75W Xenon arc lamp, 15V 5.4A, +/-0.5% drift, 1.0% fluctuation, avg. life 2000 hours, length 90mm

150 W Xenon - Ozone
Ver. (code: 100150X) $ USD

150 W Xenon discharge lamp, 20V, 7.5, 300cd, 150cd/mm^2, Avg. life 1200 hours, length 150mm

150 W Xenon, Ozone-Free - 150 W Xenon, Ozone-Free lamp Ver. (code: 100150XOF) $ USD

150W Xenon arc lamp, 17.5V, 8.5A, 290cd, 200cd/mm^2, Ave Life 1200 hrs horizontal, 3000 hrs vertical

150 W Xenon, long life, high stability, standard or Ozone-free (20V, 2500Hrs)
Ver. (code: 100150XLL) $ USD

150W Xenon discharge lamp, 20V, 7.5A, +/0.5% drift, 1% fluctuation, Avg. life 2500 hours

300W Xenon, Ozone-Free (can be used at 200W)
Ver. (code: 100300XOF) $ USD

1 INCH DIAMETER BEAM COUPLING OPTICS SELECTION

Filter Box Holder
- with one 1 inch filter mount
Ver. (code: FH 1- 1) **$ USD**

- with two 1 inch filter mounts
Ver. (code: FH 1- 2) **$ USD**

This is an aluminum filter holder box that can accommodate up to 2 filters in series. Each filter is mounted on a removable slide that is screwed into the filter holder box. The filters can be individually removed by unscrewing the slide from the holder. The filter holder and slides accept both 1" and 2" filters, which are sold separately. Additional coupling optics maybe required to secure the filter holder onto the input of a monochromator/spectrograph or output of a light source.

1 Inch Beam Condensing Assembly
- Glass (Visible and IR Light)
Ver. (code: CON1- 2L /G) **$ USD**

-Fused Silica (UV)
Ver. (code: CON1- 2L /FS) **$ USD**

Combined with the original collimating lens of the arc lamp housing, this beam-condensing assembly acts as a 2-piece plano lens system that focuses the 1 inch diameter output beam into a point. The lens in the arc lamp housing would collimate the light while the additional lens in the condensing assembly would refocus it to a point. The beam-condensing assembly mates onto the front of the arc lamp housing output port so that the additional lens is in series with the original arc lamp housing lens. Depending on the specifications and distance between the two plano lenses inside the beam-condensing assembly, the output beam can be condensed into any f number. The f number must be specified at the time of ordering and is typically used to match the input f number of a monochromator, spectrograph, or sample chamber that the light source is used to illuminate. For illuminating into a fibre optic bundle, please add the Fibre Bundle Coupler (Model FIB4). The standard glass optics version is for visible and IR applications, as glass filters harmful UV rays. A fused silica version that does not filter UV rays is also available for UV applications. The unit cost includes the alignment labour to match the specified f number, which is a time-consuming process.

Fibre Bundle Coupler
- 1 Inch diameter flange
Ver. (code: FIB4 1inch) **$ USD**

- 2 Inch diameter flange
Ver. (code: FIB4 2inch) **$ USD**

This Fibre Bundle Coupler mates a Sciencetech Beam Condensing Assembly to the input end of a fibre bundle such that the light collected by the beam condensing assembly is focused into the fibre bundle with great efficiency. The Fibre Bundle Coupler screws onto the output end of the Beam-Condensing Assembly. Once screwed on, the input tip of the fibre bundle would be positioned at the output focal spot of the Beam-Condensing Assembly for optimum light collection. There are two flange sizes of the Fibre Bundle Coupler available to match the 1 and 2 inch diameter sizes of the Beam-Condensing Assembly. Please note that the Fibre Bundle Coupler should not be used on its own without the beam-condensing assembly as otherwise the light collection efficiency from the light source would be very low.

CUSTOM 2 INCH BEAM DIAMETER UPGRADE

2 Inch Fused Silica Lens Upgrade (for UV applications)
- Fused Silica Upgrade
Ver. (code: CON2-1L /FS) $ USD

A single 2 inch borosilicate glass collimating lens at the exit port is standard in the arc lamp housing. This lens not only improves light collection efficiency to f/1.5, but also acts as a safety window should the high pressure arc lamp explode inside the housing. This glass lens also filters harmful UV rays while allowing visible and IR light to pass through (λ>360nm). For UV applications, the glass lens must be upgraded to fused silica to allow UV wavelengths (λ>200nm) to pass through as well. Please note that some UV lamps produce dangerous levels of ozone, and thus such a lens is also useful to help contain it inside the housing.

Filter Box Holder
- with one 2 inch filter mount
Ver. (code: FH 2- 1) $ USD

- with two 2 inch filter mounts
Ver. (code: FH 2- 2) $ USD

This is an aluminum filter holder box that can accommodate up to 2 filters in series. Each filter is mounted on a removable slide that is screwed into the filter holder box. The filters can be individually removed by unscrewing its slide from the holder. The filter holder and slides accepts both 1" and 2" filters which are sold separately. Additional coupling optics maybe required to secure the filter holder onto the input of a monochromator/spectrograph, or output of a light source.

2 Inch Beam Condensing Assembly
- Glass (VIS and IR)
Ver. (code: CON2- 2L /G) $ USD

- Fused Silica (UV)
Ver. (code: CON2- 2L /FS) $ USD

Combined with the original collimating lens of the arc lamp housing, this beam-condensing assembly acts as a 2-piece plano lens system that focuses the 2 inch diameter output beam into a point. The lens in the arc lamp housing would collimate the light while the additional lens in the condensing assembly would refocus it to a point. The beam-condensing assembly mates onto the front of the arc lamp housing output port so that the additional lens is in series with the original arc lamp housing lens. Depending on the specifications and distance between the two plano lenses inside the beam-condensing assembly, the output beam can be condensed into any f number. The f number must be specified at the time of ordering and is typically used to match the input f number of a monochromator, spectrograph or sample chamber that the light source is used to illuminate. For illuminating into a fibre optic bundle, please add the Fibre Bundle Coupler (Model FIB4). The standard glass optics version is for visible and IR applications as glass filters harmful UV rays. A fused silica version that does not filter UV rays is also available for UV applications. The unit cost includes the alignment labour to match the specified f number, which is a time-consuming process.

CTBT Beam Turning Assemblies

CTBTb/A beam turning assembly with regular flat mirror for 201 arc lamp housing.

CTBTc/A beam turning assembly with cold dichroic mirror for 201 arc lamp housing. Mirrors are available for ranges 300-500 nm (UV cold mirror), 400-700 nm (visible cold mirror) and 500-750 nm (extended red dichroic mirror).

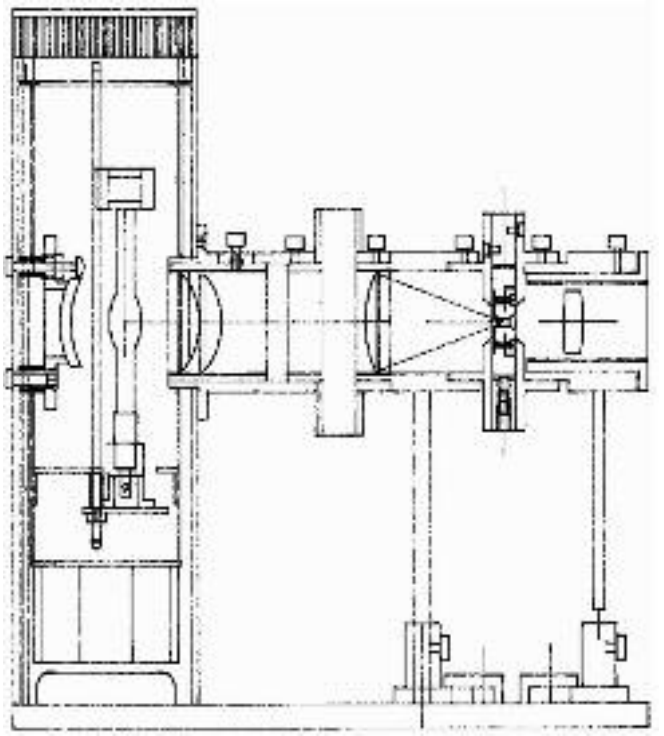
Ozone Filtering / Blower Unit

Ozone filtering/blower unit and flexible hose assembly.

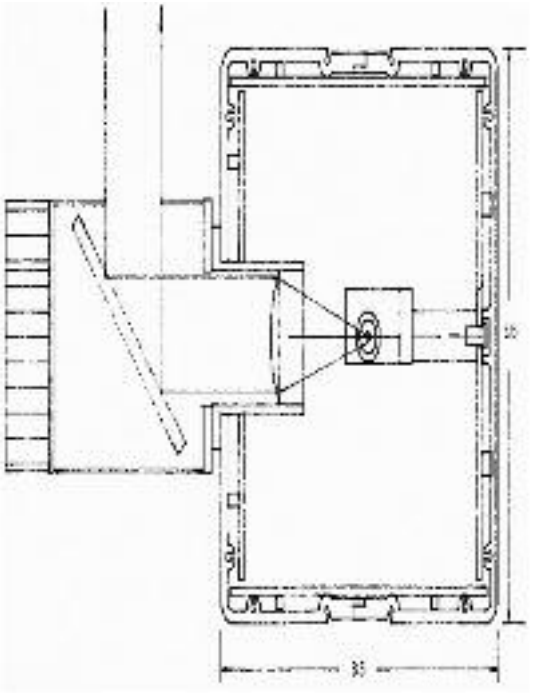
Description	Price(USD)
CTBT b/A	
CTBTc (Visible or Extended Red)	
CTBT c/UV (UV)	
Ozone filtering/ blower unit	

Please see following for diagrams

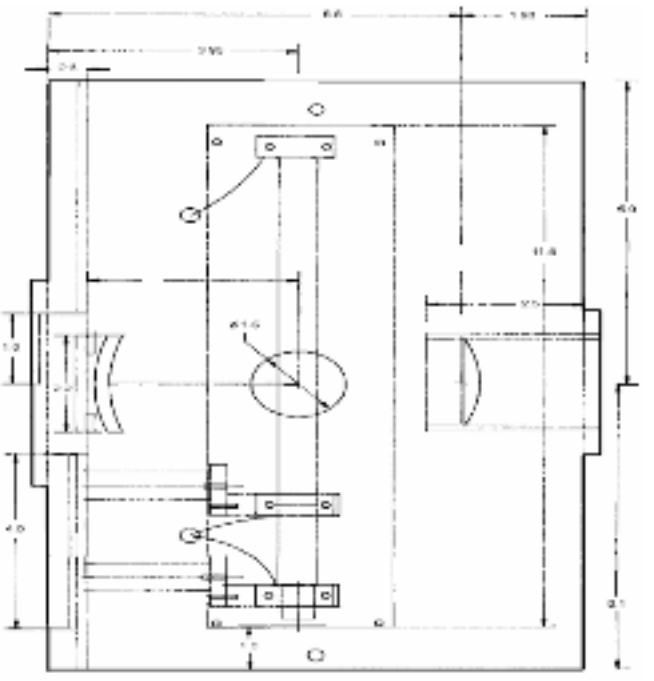
Model	Description	Price (USD)
201-1K	Air-Cooled Arc Source to 1kW	



Air Cooled Arc Source model 201-100 with collimator, filter drawer, condenser, and adjustable pinhole

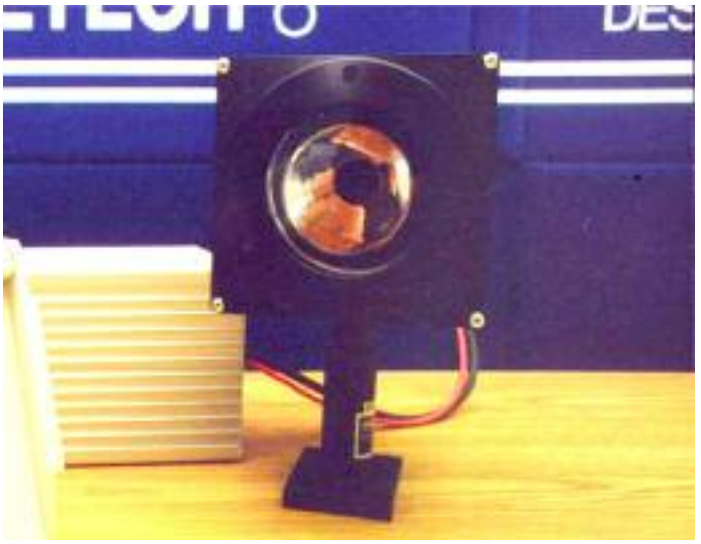


201-1K with Beam Turning Assembly (top view)



Model 201-1k Arc Lamp Housing, side view. Dimensions in inches.

Focused Beam Arc Lamp Housing (50W~200W)



Highlights

- Scientific Research Grade Arc Lamp Housing
- Focused Beam Utilizing Ellipsoidal Reflector
- f/4.5 Ellipsoidal Reflector Aperture
- Supports 75W~200W Arc Lamps
- Supports Xenon & Mercury-Xenon Arc Lamps
- Standard Forced Air-Cooled
- Available Water-Cooled
- Available 500W and 1000W Variable Power Supply Choices
- Horizontally Mounted Arc Lamp
- 2.625" Diameter Front Facing Exit Port

The Sciencetech Model 200-100 arc lamp housing is designed for use with high pressure short arc lamps up to 200W. The arc lamp housing utilizes an efficient F/4.5 ellipsoidal reflector to focus the light at a fixed point in front of the lamp housing. This reflector is made from a precision diamond turned process. The standard model has a safety glass window at the output port to eliminate harmful UV rays and to contain any harmful ozone that may be generated by the lamp within (from ozone-producing lamps only). This safety glass window can be replaced with a UV grade fused silica window if the application requires UV light to pass through. The Model 200-100 is typically air-cooled, although an optional water cooled version is available. Short arc lamp, variable DC power supply, and ignitor for power supply sold separately. Please check selection availability below.

The Model 200-100 accomplishes its focused beam through an ellipsoidal reflector, as it is the most efficient geometric shape for collecting light from a point source and refocusing it to another focal point some fixed distance away. Since an arc lamp is not a perfect point source, the resulting focal spot size is not infinitesimally small. Practically speaking, it is about 7mm~10mm in diameter, depending on the wattage and arc gap size of the arc lamp itself. Another restriction of the Model 200-100 arc lamp housing is its fixed aperture as determined by its f/4.5 ellipsoidal reflector. For optimum light transfer, the component being illuminated should have a matching aperture value. Fortunately, Sciencetech manufactures sample chambers and monochromators/spectrographs that also have an f/4.5 input aperture. For such components, the Model 200-100 is an ideal light source for its efficient light collection and optimal light transfer capability. However, it is still not recommended for applications that require a very small focal spot.

Comparing with Model 201-100

The difference between the Model 200-100 and Model 201-100 high power arc lamp housings is the geometry of the output beam. The Model 200-100 outputs a focused beam while the Model 201-100 outputs a collimated parallel beam. However, the Model 201-100 can also output a focused beam by attaching refractive condensing optics to its exit port. The advantage of the Model 200-100 is its efficient light collection ability which allows it to focus more power onto a point. The advantage of the Model 201-100 (with refractive condensing optics so that it also generates a focused beam) is its smaller focal spot, ability to generate any f number aperture by attaching different refractive condensing optics, and a more uniform beam. For very fine focal spot applications, the Model 201-100 actually achieves higher power density than the Model 200-100.

Safety Exit Port Window

The exit port is covered with a 2.625” diameter clear borosilicate glass safety window which filters out most harmful UV rays below 360nm. For UV applications, this safety glass can be replaced with an optional fused silica version which allows all wavelengths including UV light above 200nm to pass through. These safety windows also protect the user against glass shrapnel should the high pressure arc lamp explode inside.

Version Description	Version Code	Version Price (USD)
For Xe Lamps	-Xe	
For HgXe Lamps	-HgXe	

Ellipsoidal Reflector

The f/4.5 ellipsoidal reflector is the most expensive component of the arc lamp housing and accounts for over 50% of its manufacturing cost. It is made of a precision diamond turned solid aluminum piece to bear the exact geometry of an ellipsoidal surface for accurate refocusing of the arc lamp light to the small focal point in front of the housing. It is also thermally balanced to assure it does not warp under tremendous heat from the arc lamp, as the interior of the arc lamp housing can reach over 100°C. It is also specially coated to reflect all wavelengths ranging from ultraviolet to infrared.

Cooling

The interior of the Model 200-1K arc lamp housing is hot enough to boil water. To keep it cooled, a fan at the rear draws air from the back of the housing and blows it over the arc lamp. Please note that forced air-cooling should not be used on ozone-producing arc lamps as it would blow the corrosive and hazardous ozone gas to the outside work environment. For ozone-producing lamps, a water-cooled option is available such that the ozone can remain inside the arc lamp housing.

Optical Beam Height

The centre beam line of the exit port is 114.3mm (4.5 inches) above the base of the lamp housing.

Supported Arc Lamps

The arc lamp is mounted in a horizontal position inside the Model 200-100. The exit port is at the cathode end of the lamp and shines horizontally outwards. Due to this orientation, mercury arc lamps are not recommended as their service life is greatly shortened in horizontal operation than vertical operation. The service life of xenon arc lamps are not affected by orientation. The Model 201-100 accommodates short arc lamps ranging from 75W to 200W, which are sold separately. Please see “Arc Lamp Selection” in group accessories for a range of available xenon and mercury-xenon arc lamps. Since each arc lamp type and wattage has its own socket style and cooling shroud requirement, it must be specified at the time of ordering. The arc lamp housing will not be able support another type or wattage of arc lamp after it is manufactured.

Power Supply

The Model 200-1K arc lamp housing is designed to work with Sciencetech Model 550-200 adjustable power supply with external Model 500-IG igniter. This is a highly stabilized linear DC power supply capable of producing 0W~200W (adjustable). An optional Optical Feedback Unit (Model FS-02) with a built-in fibre optic light sensor is also available to monitor the light intensity of the arc lamp and automatically adjust the power supply to maintain a consistent non-fluctuating intensity. The Model 200-100 arc lamp housing can also be used with other non-Sciencetech DC arc lamp power supplies as long as the power supply provides both DC output for lamp (typically 12~30VDC) and a separate 115VAC for its cooling fan. The power supply must also have its own arc lamp ignition. The Model 550-200 power supply is available in both 120VAC and 230VAC versions.

Other Arc Lamp Housing Models

Please consider the Model 200-1K arc lamp housing for high wattage lamps between 500W~1600W. The Model 200-1K has the same ellipsoidal reflector design as the Model 200-1K for efficient light collection and focused output beam. Also available is the Model 201-100 arc lamp housing that produces a collimated parallel output beam. The Model 201-100 supports the same set of 75W~200W arc lamps and is compatible with the same Model 550-200 adjustable power supply as the Model 200-100. However, the Model 201-100 is less efficient in light collection, but can achieve a smaller focal spot of any f number with refractive condensing optics attachments and produces a more uniform intensity beam.

Customization

Sciencetech has built many customized versions of the Model 200-100 arc lamp housing. Examples include a vertically mounted version for mercury lamps, and even a gold coated reflector version for IR applications. If you require a certain feature in this arc lamp housing that is not shown, please contact our Applications Specialists at sales@sciencetech-inc.com for a custom quotation.

ACCESSORIES

UV Fused Silica Safety Window (>200nm) (200-180)

If the application requires UV light, the standard safety glass window on the arc lamp housing should be replaced with a UV grade fused silica safety window to allow ultraviolet light above 200nm to pass through. The standard safety glass safety window blocks almost all UV light below 350nm from leaving the arc lamp housing. Please note that UV rays are harmful and therefore protective eyewear and clothing should be worn. Both Xenon (Xe) and Mercury Xenon (HgXe) emit UV light.

Gold Coated Ellipsoidal Reflector (200-ellipsoidal-G)

The ellipsoidal reflector can be gold coated for better IR reflectivity. This price reflects the additional gold coating, and not the ellipsoidal reflector itself.

Water-Cooling
(20X-1K-WC)

The standard arc lamp housing is forced air-cooled with a blower. However, this should not be used with ozone-producing arc lamps as it would blow the corrosive and hazardous ozone outside the housing into the work environment. A water-cooled version that leaves the ozone inside the arc lamp housing is far safer. Please select this option if selecting an ozone producing lamp (usually for UV applications). This option only provides a water-cooling loop inside the arc lamp housing. An additional external water recirculating unit is required.

Calibrated Light Source
(CalibLight) $ USD

This is a calibration service that documents this particular unit's spectral characteristic of the lamp with reference to NIST (U.S.) or NPL (U.K.) standard. Realistically, this service should be purchased with an entire light source system including arc lamp housing and power supply to assure a constant reference condition.

Replacement F/4.5 Ellipsoidal Reflector for Model 200-100 arc lamp housing
(200-100-F4.5) $ USD

The Model 200-100 (Formerly 200/210 Series) arc lamp already includes a built-in F/4.5 ellipsoidal reflector. Should it burn out or get damaged, it can be replaced with this replacement model. This ellipsoidal reflector is made of high quality diamond turned aluminum and coated for high reflectivity.

200W Adjustable Power Supply for Arc Lamps
(550-200) $ USD

The Sciencetech 500-200 series of DC power supplies deliver power for lamps up to 200 W. They can drive lamps with a voltage of up to 30V and a current of up to 10A. A digital LCD display, located on the front panel, indicates either current, voltage, or power. These power supplies are fully adjustable from 0W to 200W and offer a protected output against short circuit or abnormal operating conditions.

Arc lamp Igniter (for use with Model 500-200 and 550-200 Power Supplies) (500-IG) $ USD

The Sciencetech Model 500-200 and 550-200 Power Supplies require this mandatory Model 500-IG external igniter for starting arc lamps. This ignitor is connected in series to the Model 500-200 Power Supply and automatically generates a 20kV spike to ignite the arc lamp. The ignitor can detect the presence of an arc lamp and will automatically try to ignite it up to 5 times once the power supply has been turned on.

Optical Feedback Unit (FS-02) $ USD

Technical Specifications

- 3" Diameter Diamond Turned Ellipsoidal Reflector
- 2.625" Diameter Exit Port with Standard Glass Safety Window
- Available UV Fused Silica Safety Window
- Ellipsoidal Reflector Aperture: f/4.5
- Approx Focal Spot Location: 239mm in front of Exit Port
- Spot Size: 9mm for 1000W Xe Lamp
- Removable Back Panel For Lamp Replacement
- Painted Aluminum Body
- + and - Terminals for Arc Lamp Power (12DC~30VDC typical)
- Live and Neutral Terminals for Cooling Fan (115VAC)
- Centre Beam Line Height: 76.2mm (3") above base
- Dimensions: 470mm x 216mm x 216mm x 222mm (18.5" x 8.5" x 8.75")

Group Accessories

Please check the appropriate sections in the catalogue for the following:

75~200W Arc Lamp Selection	(Arc Lamps2)
Specialty Safety Windows Upgrade	(SpWinLow)

75W~200W ARC LAMP SELECTION

75W Xenon - Sciencetech arc lamp housing
Ver. (code: 10075X) $ USD
75W Xenon arc lamp, 14V, 5.4A, 100cd, 400cd/mm^2, Avg. life 400 hours, length 90mm

75 W Xenon, ozone-Free, small bright arc
Ver. (code: 10075XOF) $ USD
75W Xenon arc lamp, 14V 5.4A, 100cd, 400cd/mm^2, Avg. life 400 hours, length 90mm

75W Xenon, long life, high stability, standard or ozone-free - Ver. (code: 10075XLL) $ USD
This is a short arc Xenon (Xe) lamp designed to work with Sciencetech's Model 201-100 or Model 200/210 Arc Lamp housings. The corresponding power supply with these housings is Sciencetech's Model 500-200 variable control DC linear power supply (50W~200W) with separate Model 500-IG ignitor.
Specifications 75W Xenon arc lamp, 15V 5.4A, +/-0.5% drift, 1.0% fluctuation, Avg. life 2000 hours, length 90mm

150 W Xenon - ozone
Ver. (code: 100150X) $ USD
150 W Xenon discharge lamp, 20V, 7.5, 300cd, 150cd/mm^2, Avg. life 1200 hours, length 150mm

150 W Xenon, ozone-free
Ver. (code: 100150XOF) $ USD
150W Xenon arc lamp, 17.5V, 8.5A, 290cd, 200cd/mm^2, Ave Life 1200 hrs horizontal, 3000 hrs vertical

150 W Xenon long life, high stability, standard or ozone-free (20V, 2500Hrs)
Ver. (code: 100150XLL) $ USD
150W Xenon discharge lamp, 20V, 7.5A, +/0.5% drift, 1% fluctuation, Avg. life 2500 hours

300W Xenon ozone-free (can be used at 200W)
Ver. (code: 100300XOF) $ USD

SPECIALTY SAFETY WINDOWS UPGRADE

UV Fused Silica Safety Window (>200nm) - For 200-100 arc lamp housing Ver.
(code: 200-180 -200-100)
If the application requires UV light, the standard safety glass window on the arc lamp housing should be replaced with a UV grade fused silica safety window to allow ultraviolet light above 200nm to pass through. The standard safety glass safety window blocks almost all UV light below 350nm from leaving the arc lamp housing. Please note that UV rays are harmful and therefore protective eyewear and clothing should be worn. Both Xenon (Xe) and Mercury Xenon (HgXe) emit UV light.

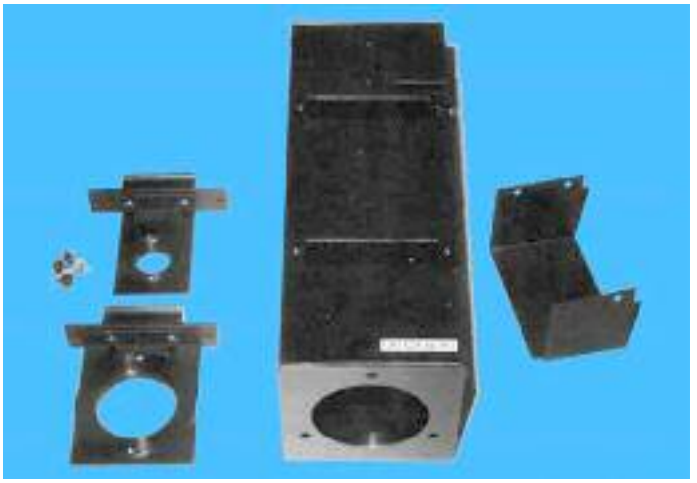
UV Quartz Safety Window (>250 nm)
Ver. (code: 200-250)

UV Pyrex Safety Window (>350nm)
Ver. (code: 200-350)

This is a clear protective window for the Model 200-1K series arc lamp housing. It stops all UV-A/B/C light and only allows wavelengths greater than 350nm to pass through. This protective window is recommended if an ozone-producing arc lamp is chosen (to contain the ozone inside the housing) or if the arc lamp housing light source opening is exposed (i.e. not mated to coupling tube, beam homogenizer, monochromator, or sample chamber).

No Safety Window - For 200-100 arc lamp housing
Ver. (code: 200-0)
The standard arc lamp housing has a borosilicate safety glass window that filters all harmful UV light below 360nm. However, this safety glass window can be removed, thereby allowing all UV wavelengths through. This is not recommended as the BK7 safety glass also provides physical protection in case the arc lamp explodes and traps ozone as certain UV arc lamps produce dangerous levels of ozone.

Coupling Tube Model CT for Arc Lamps

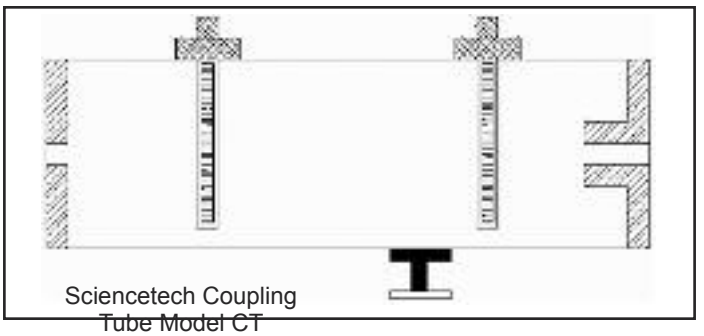


Sciencetech Model CT Coupling Tube with filter holders

The Sciencetech model CT coupling tube correctly spaces our arc lamp housing (using an f/4.5 reflector) to any of our monochromators or spectrometers.

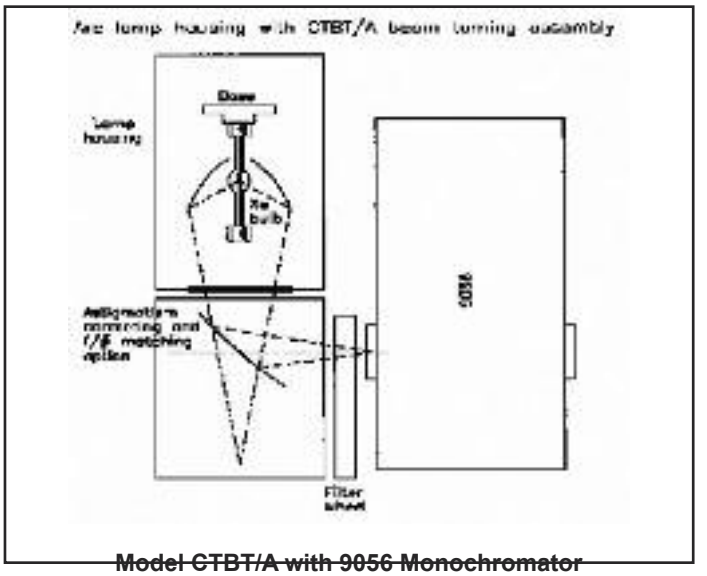
Features:

- Black anodized aluminum construction.
- Comes with two filter holders, each capable of holding a 1 to 6 mm thick substrate.
  1) One for a 2" diameter or a 2" square filter
  2) One for a 1" diameter or a 1" square filter
- This design allows for flexibility with respect to filter heat dissipation and cost.
- A cut-out enables the use of a chopper at the monochromator end.
- An internal baffle has been introduced at the monochromator end to minimize exterior light entry.



Sciencetech Coupling Tube Model CT

Model	Description	Price (USD)
CT	Coupling tube with filter holders	
CTHT	Coupling for 1kW arc lamp, transmission filters	
CTC	Coupling tube for 200 W source to sample chamber	
CTA	Adaptor tube for CTC for input to monochromator	



Model CTBT/A with 9056 Monochromator

Beam Turning Assembly Model CTBT for Small Arc Lamp Housings

Beam turning assemblies rotate the output of arc sources by 90°. Beam turning assemblies are offered with regular mirrors and dichroic mirrors for wavelength ranges of 300-500 nm, 400-700 nm and 500-750 nm. The CTBT/A is a beam turning assembly specially designed to couple the 200 or 250 series arc lamps to Sciencetech 9055 or 9056 monochromators. (200 and 250 series arc lamp housings are found on pages 3-13 to 3-16. Sciencetech monochromators 9055 and 9056 are found on pages 4-13 to 4-16). The CTBT/A housing includes a toroidal mirror that matches the f number of the arc source to the monochromators and compensates for the astigmatism of the monochromators. This maximizes the throughput of the light source / monochromator system and gives a nearly non-astigmatic image at the output of the monochromator. The CTBT/A has an aluminum /MgF12 overcoat, optimized for UV/VIS applications. The CTBTb is a beam turning assembly with a regular flat mirror. The CTBTc is a beam turning assembly with a cold dichroic mirror. Mirrors are available for ranges 300-500 nm (UV cold mirror), 400-700 nm (visible cold mirror), and 500-750 nm (extended red dichroic mirror).

Model	Description	Price

500-200 Power Supply and Igniter

Sciencetech Model 550-200 Power Supply and Igniter

The Sciencetech 550-200 is a power supply for arc lamps up to 200 W. It can drive lamps with a voltage of up to 30V and a current of up to 10A. A digital LCD displays current, voltage, and power.

Model 550-200 is a power supply for air-cooled housing. It has a safety interlock and a relay that allows power to the housing only if the fan cable is connected, otherwise it displays a warning message. It is also prepared to work at either 110V or 220V.

The Sciencetech 550-200 power supply automatically selects the appropriate voltage for the arc lamp. The power of the lamp is adjusted by means of varying the current. It is a DC regulated power supply.

A double voltage regulation mechanism produces excellent current regulation: an SCR controls the voltage on the main storage capacitors and a linear regulator does the final electrical polishing. With this setup, the voltage across the regulating transistor is maintained at approximately 1.5V independently of the lamp operating voltage and set current.

This novel power supply design provides the advantages of both linear and pulsed power supply operation: low noise as in a linear supply and low electrical dissipation at the same order as pulsed supplies. The current regulation is actually even better than in standard linear power supplies because the regulation transistor always operates at the same voltage and therefore can be better optimized than one that has to perform under widely variable conditions. AC input and DC output are fully isolated.

The lamp starter Sciencetech 500-IG for 200 series arc lamp housing operates automatically. When the power supply is turned on, the starter strikes a high voltage pulse across the lamp until the arc is established. The starter does not require additional power since it draws its electrical power from the power supply. When the load voltage is below 32V (lamp is already turned off) the igniter will shut off. The igniter unit also contains the voltage boost (for lamp start) circuitry.

Technical Specifications

Power Supply

Input:	110-115 v/60Hz or 210-250 v/50 Hz (selectable)
Power:	0-200W
Operating Voltage:	0-30 V
Operating Current:	0-10 A
Pre-Ignition Voltage:	> 80 V
Ripple at Maximum Current:	< 1 mV
Stability after Warm-Up:	0.05%
Line Voltage Regulation: .	02% current variation for 5 V line change
Display:	digital LCD
Optical Feedback:	all units with connection at back for optional feedback system
Dimensions:	5.8” x 9.5” x 14.4” (12.9 cm x 20.9 cm x 31.7 cm)
Weight:	9.86 kg

Additional Features of 550-200 (for air-cooled housing):

- fan power supply and cable
- safety interlock
- warning messages
- thermal protection

Igniter

- Stand alone for low RF interference

Input Voltage Supply Line:	36 V on, < 32 V off
Output Voltage:	20 kV
Dimensions:	4.8” x 5.0” x 7.6” (10.5 cm x 10.9 cm x 16.8 cm)
Weight:	1.04 kg

Model	Description	Price (USD)
550-200	power supply for air-cooled housing	
500-IG	200 series igniter	

DC Lamp Feedback / Stabilizer Unit Model FS-02

Sciencetech Model FS-02 DC Feedback/Stabilizer

The Sciencetech FS-02 DC feedback/stabilizer is a microprocessor controlled unit that interfaces with both Sciencetech's low and high power supplies (models 500-200 and 550-200 for up to 200 W and 500-1K for up to 1000 W) to maintain a constant output level independent of bulb aging and arc wander. It has been specially designed for maximum gain and frequency response within the stability limits of the lamp itself.

Model FS-02 can also be used with a Sciencetech power supply for filament (QTH) bulbs where it provides an output independent of ambient temperature, an important feature for low power bulbs. A variation of the unit, FS-02M, allows interfacing to other power supplies.

The system includes a sensor head, coaxial sensor cable, controller unit, control cable, and power wall plug-in unit. The light sensing head monitors part of the light source output.

The controller reads the set point of the supply, automatically adjusts the gain, and sets the compliance limits to provide an optimized response comparing the signal at the head to the set level.

The embedded microprocessor allows simple system operation and protects the unit from overstressing the lamp through excessive current.

Technical Specifications

Sensor Head
Temperature compensated photodiode

Detector:	1.1 mm
Filter:	400-700 nm transmission band

Control Unit

DC Gain:	40
3 DB Roll off Frequency:	35 Hz
Input Level Dynamic Ratio:	15:1
Set Point Accuracy:	± 1%
Control:	± 25% of set point
Power:	10.2 V AC wall plug-in power supply (labelled 10 V AC)

Options

- **UV head**
- **IR head**
- **Temperature stabilized head**
- **Filters for band shaping**
- **Attenuators**
- **Diffuser**
- **Focusing Optics**

The microprocessor sets the signal level and the time constant of the feedback loop. It also enables and disables the feedback signal. Careful design of components and DC values imparts maximum dynamic range to the unit.

Push button switches are used to activate or disconnect the feedback loop. A matrix of six LEDs give information on the input levels and stabilization conditions.

The standard system includes a temperature compensated photodiode sensor head. Optional sensors are available for UV and IR detection.

Model	Description	Price (USD)
FS-02	Optical feedback unit (DC) microprocessor control	

High Power Collimated Beam Arc Lamp Housing (450W~1000W)

Highlights

- Scientific Research Grade Arc Lamp Housing
- Collimated Uniform 2 Inch Diameter Output Beam
- Supports 450W~1000W Arc Lamps
- Supports Xenon, Mercury, & Mercury-Xenon Arc Lamps
- Standard Forced Air-Cooled
- Available Water-Cooled
- Available Refractive Condensing Optics Attachments
- Available 500W and 1000W Variable Power Supply Choices
- Vertically Mounted Arc Lamp
- Side Exit Port with Back Spherical Reflector

The Model 201-1K arc lamp housing produces a collimated 2 inch diameter uniform beam (parallel rays) at the exit port (f/1.5). This allows for the attachment of refractive condensing optics (sold separately) to refocus the output light into a very fine focal point for maximum brightness. This is ideal for fibre optic applications where the light needs to be condensed into a small entrance of a fibre bundle. The Model 201-1K is designed for 450W~1000W Xenon, Mercury-Xenon, and Mercury short arc lamps (sold separately). The housing is forced air-cooled with the arc lamp mounted in a vertical position. The exit port collects light from the side of the arc lamp with a back mounted spherical reflector to double light collection. Please specify arc lamp wattage and type at time of ordering as the lamp socket and cooling shroud is specific to the selected arc lamp.

Optical Configuration

The arc lamp is mounted in a vertical position with the exit port on the side wall. A back spherical reflector mounted on adjustable alignment pins redirects the rear illumination to the forward exit port, thereby doubling the amount of light collected. However, this configuration is still not as effective as the ellipsoidal reflector-based arc lamp housings (Model 200-1K) system in light collection, although it does produce a more uniform beam.

Beam Collimation

A 2 inch diameter collimating lens is mounted at the exit port of the arc lamp housing to produce near parallel output rays (f/1.5). This lens is made of borosilicate glass and filters most harmful UV rays below 360nm. For UV applications, this lens can be replaced with a fused silica version which allows all wavelengths including UV light above 200nm to pass through. Please see “2 Inch Fused Silica Lens Upgrade” accessory for details.

Focusing Optics

Refractive condensing optics can be attached to the exit port of the Model 201-1K arc lamp housing to focus the light into a fine focal spot (Please see “2 inch Diameter Beam Coupling Optics Selection” Group Accessories for details). Refractive condensing optics are actually better at condensing light onto a smaller spot than ellipsoidal reflector based optics like the Model 200-100 and 200-1K arc lamp housings. More importantly, refractive condensing optics can be set to any aperture value allowing it to better match the f number of the device it is illuminating for maximum light transfer efficiency. Ellipsoidal reflector based optics on the other hand, have a fixed aperture and therefore cannot match the f number of any illuminated device for maximum light transfer efficiency.

Cooling

The interior of the Model 201-1K arc lamp is hot enough to boil water. To keep it cool, a blower at the top draws air from the bottom and blows it over the arc lamp. Please note that forced air-cooling should not be used on ozone-producing arc lamps, as it would blow the corrosive and hazardous ozone outside to the work environment. A water-cooled option is available for the ozone to remain inside the arc lamp housing.

Version Description	Version Code	Version Price (USD)
For 450W or 500W Xe	-500WXe	
For 1000W Xe	-1KWXe	
For 450W or 500W HgXe	-500WHgXe	
For 1000W HgXe	-1KWHgXe	

Optical Beam Height

The centre beam line of the exit port is 284.2mm (11.19 inches) above the base of the lamp housing.

Supported Arc Lamps

The Model 201-1K supports 450W~1000W short arc lamps which are sold separately. Please see “Arc Lamp Selection” in group accessories for a range of available xenon, mercury-xenon, and mercury arc lamps. Since each arc lamp type and wattage has its own socket style and cooling shroud requirement, it must be specified at the time of ordering. The arc lamp housing will not be able support another type or wattage of arc lamp after it is manufactured unless the optional “Interchangeable Xe and HgXe Lamps Modular Adapter” is ordered.

Power Supply

The Model 201-1K arc lamp housing is designed to work with Sciencetech Model 500-500 (500W) and 500-1K (1000W) adjustable power supplies with built-in ignitors. These power supplies are highly stabilized switching DC power supplies that can be adjusted above or below its rated power. For example, the 500W power supply can be adjusted between 350W~500W while the 1000W Power supply can be adjusted between 800W~1200W. An optional Optical Feedback Unit (Model FS-02) with a built-in light sensor is available to monitor the light intensity of the arc lamp and automatically adjust the power supply to maintain a consistent non-fluctuating intensity. The Model 201-1K arc lamp housing can also be used with other non-Sciencetech DC arc lamp power supplies as long as the power supply provides both DC output for the lamp and a separate 220/240VAC output for its cooling fan. The power supply must also have its own arc lamp ignition. Please note that Sciencetech's Models 500-500 (500W) and 500-1K (1000W) power supplies are designed for 220~240VAC input. However, the Model 500-500 (500W) power supply can be operated at 120VAC, but the cooling fan inside the arc lamp housing would need to be converted to 120VAC as well. Please order Product Code 20X-1K-CF120VAC for this 120VAC cooling fan conversion.

Other Arc Lamp Housing Models

Please consider the Model 201-100 arc lamp housing for lower wattage lamps between 75W~200W. The Model 201-1K has the same vertical mount design and collimated output beam as the Model 201-1K, but is designed for lower power lamps with a 1 inch diameter output beam. Also available is the Model 200-1K arc lamp housing that utilizes an ellipsoidal reflector optical system for greater light collection ability.

The Model 200-1K supports the same set of 450W~1000W arc lamps and is compatible with the same models 500-500 and 500-1K adjustable power supplies. However, the Model 200-1K ellipsoidal reflector has a fixed f/2.5 aperture and its beam is not nearly as uniform as the Model 201-1K.

Customization

Sciencetech has built many customized versions of the Model 201-1K arc lamp housing. Examples include a water-cooled version and a horizontally mounted version to lower its optical beam height to match that of a table top system. If you require a certain feature in this arc lamp housing that is not shown, please contact our Applications Specialist at sales@sciencetech-inc.com for a custom quotation.

ACCESSORIES

2 Inch Fused Silica Lens Upgrade (for UV applications) (CON2-1L) $ USD

A single 2 inch borosilicate glass collimating lens at the exit port is standard in the arc lamp housing. This lens not only improves light collection efficiency to f/1.5, but also acts as a safety window should the high pressure arc lamp explode inside the housing. This glass lens also filters harmful UV rays while allowing visible and IR light to pass through (λ>360nm). For UV applications, the glass lens must be upgraded to fused silica to allow UV wavelengths (λ>200nm) to pass through as well. Please note that some UV lamps produce dangerous levels of ozone, and thus such a lens is also useful to help contain it inside the housing.

Interchangeable Xe and HgXe Lamps Modular Adapter (200-1K-ILC) $ USD

The 200-1K and 201-1K arc lamp housings are typically designed to accommodate either Xenon (Xe) or Mercury Xenon (HgXe) lamps, but not both. The reason is that each lamp type has a different socket base and cooling requirement (the Mercury-Xenon needs to run hotter to assure that the Mercury is completely vaporized inside the lamp). This interchangeable option allows the user to change the lamp socket and heat shroud cover inside the 200-1K/201-1K arc lamp housing so that it can accommodate either Xenon or Mercury Xenon lamps. The customer would need to replace the anode and cathode connections and possibility do some minor re-alignment of the lamp for optimum performance after a lamp type changeover. Please also note that the user should purchase the HgXe version power supply as that will work for both Xenon and Mercury Xenon but not vice versa.

Water-Cooling
(20X-1K-WC)

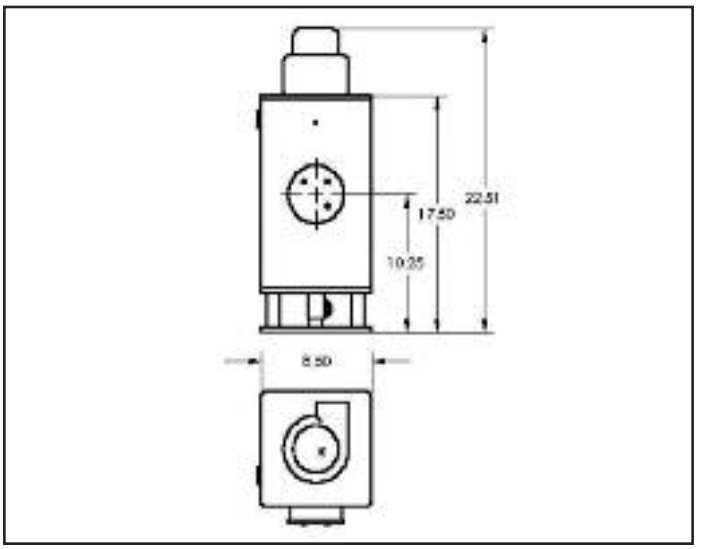
The standard arc lamp housing is forced air-cooled with a blower. However, this should not be used with ozone-producing arc lamps as it would blow the corrosive and hazardous ozone outside the housing into the work environment. A water-cooled version that leaves the ozone inside the arc lamp housing is far safer. Please select this option if selecting an ozone producing lamp (usually for UV applications). This option only provides a water-cooling loop inside the arc lamp housing. An additional external water recirculating unit is required.

120VAC Cooling Fan
(20X-1K-CF120VAC) **$ USD**

The standard Models 201-1K and 200-1K high power arc lamp housings utilize a 230VAC cooling fan. Therefore the arc lamp power supply connected to it must supply both a DC voltage (typically 17DC~35DC) for the arc lamp and also a 230VAC for the cooling fan. Sciencetech Models 500-500 (500W), 500-1K (1000W) and 500-1.5K (1500W) power supplies are all capable of doing this. However, Sciencetech Model 500-500 (500W) power supply can also be operated at 120VAC, in which case the cooling fan of the arc lamp housing would need to be replaced with a 120VAC version as well. This option is also required if a non-Sciencetech arc power supply that only generates 120VAC is used with the arc lamp housing.

Calibrated Light Source
(CalibLight)

This is a calibration service that documents this particular unit's spectral characteristic of the lamp with reference to NIST (U.S.) or NPL (U.K.) standard. Realistically, this service should be purchased with an entire light source system including arc lamp housing and power supply to assure a constant reference condition.



Technical Specifications

- 2 inch (50mm) diameter exit port, with f/1.5 collimating lens
- Removable Top for lamp replacement
- Three point adjustable pins for back spherical reflector alignment
- Aluminum Body, painted
- + and - Terminals for Arc Lamp Power (17DC~35DC typical)
- Live and Neutral Terminals for Cooling Fan (220~240VAC)
- Available Refractive Condensing Optics Attachments
- Weight: 12.5kg
- Centre Beam Line Height: 284.2mm (11.19") above base
- Dimensions: 216mm x 216mm x 572mm (8.5" x 8.5" x 22.51")

Group Accessories

Please check the appropriate sections in the catalogue for the following**:**

450W~1000W Arc Lamp Selection	(arclamps3)
High Power Arc Lamp Power Supplies	(arcPSHi)
2 Inch High Power Light Coupling Optics Selection	(LgtCoup2InHi)

450W~1000W Arc Lamp Selection

450 W Xenon, ozone-free
Ver. (code: 100450XOF) **$ USD**

This is the standard Xenon lamp recommended for the Model 500-500 Power Supply. Although it is rated at 450W, it can be driven at 500W with little effect on its service life. (18V 25A, 1300cd, 350cd/mm2, Avg. Life 2000 hours, length 260mm)

450 W Xenon, High UV Output
Ver. (code: 100450XUV) **$ USD**

The Sciencetech Model 500-1K power supply is designed for this lamp 18V, 25A, 1300cd, 350cd/mm2, Avg. life 2000 hours). This lamp utilizes a silica envelope for high ultraviolet output above 260nm. Please be aware that this lamp produces a corrosive and hazardous ozone gas when operated and should only be used inside a water-cooled enclosed housing.

500 W Mercury
Ver. (code: 100500M) **$ USD**

The Sciencetech Model 500-500-Hg Power Supply is designed for this lamp (75V, 6.7A, arc size 1.1 x 4.1 mm, Avg. life 800 hours, length 133mm)

HIGH POWER COLLIMATED BEAM ARC LAMP HOUSING

500W Xenon, ultra-bright and ozone-free

Ver. (code: 100500XOFB -XOFB) $ USD

This Xenon Arc lamp has a very small arc gap of 0.7mm x 0.8mm, allowing it to achieve an incredible 260,000 cd/cm^2. This is considerably higher than a typical 500W Xenon arc lamp of only 40,000 cd/cm^2. This arc lamp is ideal in applications where a small focal spot is required such as going through the input of a monochromator slit. Unfortunately, the service life of this arc lamp is very short, only 200 hrs compared to 2000hrs. The operating voltage is 14V at 30A.

1000 W Xenon

Ver. (code: 1001kX 1001kX) $ USD

The Sciencetech Model 500-1K power supply is designed for this lamp (23VDC, 43.5A, 3000cd, 400cd/mm2, Avg. life 1000 hours, length 215mm). Please note that this arc lamp produces ozone and therefore should be used inside a water-cooled housing.

1000 W Xenon, ozone-free

Ver. (code: 1001kXOF) $ USD

The Sciencetech Model 500-1K power supply is designed for this lamp (23VDC, 43.5A, 3000cd, 400cd/mm2, Avg. life 1000 hours, length 215mm)

1000 W Mercury-Xenon, ozone-free

Ver. (code: 1001kMX) $ USD

The Sciencetech Model 500-1K power supply is designed for use with this lamp. (25V, 40A 800 hours).

1000 W Mercury ozone-free

Ver. (code: 1001kM) $ USD

1000W Mercury arc lamp, 70~85VDC, 14.2~11.8A, 6mm threat size, 580K base, Avg. life 800 hours, length 235mm.

High Power Arc Lamp Power Supplies

500W Adjustable Power Supply - Xenon

Ver. (code: 500-500 -Xe) $ USD

- Mercury-Xenon

Ver. (code: 500-500 -HgXe) $ USD

For both Xe and Hg-Xe arc lamps up to 500W. The arc lamp is powered through an external adjustable DC power supply capable of producing 350W~500W. The power supply has a built-in igniter and a manually operated control panel with LCD display for fine voltage, current, and power adjustments. The power supply auto selects the voltage and current between Xenon and HgXe lamps.

500W Fixed Power Supply - Mercury

Ver. (code: 500-500-Hg) $ USD

With ignitor for Hg lamps with optical feedback.

1KW Adjustable Power Supply - Xenon

Ver. (code: 500-1K -Xe) $ USD

- Mercury-Xenon

Ver. (code: 500-1K -HgXe) $ USD

The Sciencetech 500-1K is a DC power supply for Xenon (Xe) and Mercury Xenon (Hg-Xe) arc lamps from 800 W to 1.2kW. It can drive lamps with a voltage of up to 36 V and currents up to 50 A within a power limitation excluding cable resistance and starter voltage losses. The switch mode design allows for a compact system.

1KW Fixed Power Supply - Mercury

Ver. (code: 500-1k-Hg -Hg) $ USD

DC power supply with built-in ignitor.

2 Inch High Power Light Coupling Optics Selection

Filter Box Holder - with one 2 inch filter mount
Ver. (code: FH 2-1) $ USD

Filter Box Holder - with two 2 inch filter mounts
Ver. (code: FH 2-2) $ USD

This is an aluminum filter holder box that can accommodate up to 2 filters in series. Each filter is mounted on a removable slide that is screwed into the filter holder box. The filters can be individually removed by unscrewing its slide from the holder. The filter holder and slides accepts both 1" and 2" filters which are sold separately. Additional coupling optics maybe required to secure the filter holder onto the input of a monochromator/spectrograph, or output of a light source.

2 Inch Beam Condensing Assembly
- Glass (VIS and IR)
Ver. (code: CON2-2L /G) $ USD

- Fused Silica (UV)
Ver. (code: CON2-2L /FS) $ USD

Combined with the original collimating lens of the arc lamp housing, this beam-condensing assembly acts as a 2 piece plano lens system that focuses the 2 inch diameter output beam into a point. The lens in the arc lamp housing would collimate the light while the additional lens in the condensing assembly would refocus it to a point. The beam condensing assembly mates onto the front of the arc lamp housing output port so that the additional lens is in series with the original arc lamp housing lens. Depending on the specifications and distance between the two plano lenses inside the beam-condensing assembly, the output beam can be condensed into any f number. The f number must be specified at the time of ordering and is typically used to match the input f number of a monochromator, spectrograph or sample chamber that the light source is used to illuminate.For illuminating into a fibre optic bundle, please add the Fibre Bundle Coupler (Model FIB4). The standard glass optics version is for visible and IR applications as glass filters harmful UV rays. A fused silica version that does not filter UV rays is also available for UV applications. The unit cost includes the alignment labour to match the specified f number, which is a time consuming process.

Fiber Bundle Coupler - 2 Inch diameter flange
Ver. (code: FIB4 2inch) $ USD

This Fibre Bundle Coupler mates a Sciencetech Beam-Condensing Assembly to the input end of a fibre bundle such that the light collected by the beam condensing assembly is focused into the fibre bundle with great efficiency. The Fibre Bundle Coupler screws onto the output end of the Beam-Condensing Assembly. Once screwed on, the input tip of the fibre bundle would be positioned at the output focal spot of the Beam-Condensing Assembly for optimum light collection. There are two flange sizes of the Fibre Bundle Coupler available to match the 1 and 2 inch diameter sizes of the Beam Condensing Assembly. Please note that the Fibre Bundle Coupler should not be used on its own without the beam-condensing assembly, as otherwise the light collection efficiency from the light source would be very low.

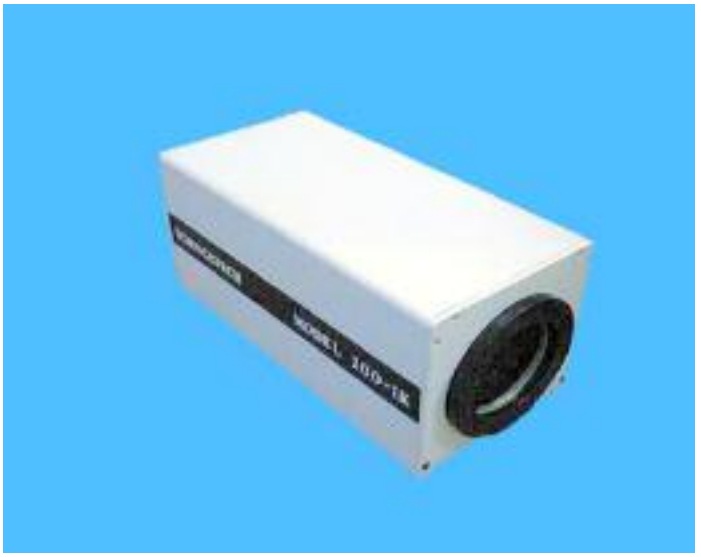
IR Absorbing Water Filter
(Fused Silica Window) - Aluminum, 2
Ver. (code: 01-8711 0187112) $ USD

(Glass Window) - Aluminum, 2
Ver. (code: 01-8712 0187112) $ USD

IR absorbing waters are valuable tools as they protect other filters and optical components from IR damage while still transmitting 200 to 905nm wavelengths. Liquid filters are useful for removing infrared light from 1000 to 3000 nm. All models have a re-circulated water jacket to cool the filter itself - excellent for high power applications.

Sciencetech offers IR filters in both aluminum and stainless steel models. Aluminum filters are used in experiments where only distilled water is used. Stainless steel filters are used when the absorbing media is water, copper sulfate or nickel sulfate.

High Power Focused Beam Arc Lamp Housing (450W~1000W)



Highlights

- Scientific Research Grade Arc Lamp Housing
- High Power Focused Beam
- Efficient Ellipsoidal Reflector Light Collection
- f/2.5 Ellipsoidal Reflector Aperture
- Supports 450W~1600W Arc Lamps
- Supports Xenon & Mercury-Xenon Arc Lamps
- Standard Forced Air-Cooled
- Available Water-Cooled
- Available 500W, 1000W, 1500W Variable Power Supply Choices
- Horizontally Mounted Arc Lamp
- 4.5" Diameter Front Facing Exit Port

The Model 200-1K arc lamp housing produces a high power focused beam at its 4.5” diameter exit port which condenses onto a small focal spot approx 24cm in front of it. This is made possible by its geometrically efficient ellipsoidal reflector that collects the light from the arc lamp inside. The housing is forced air-cooled with the arc lamp mounted in a horizontal position. The exit port is at the cathode end of the arc lamp and shines outwards through the front of the housing. Due to its horizontal layout, the Model 200-1K does not support mercury arc lamps. Instead, it supports 450W ~ 1600W xenon and mercury-xenon arc lamps which are sold separately. Please specify the arc lamp wattage and type at time of ordering as the lamp socket and cooling shroud of the arc lamp housing is specific to the selected arc lamp.

Optical Configuration

The Model 200-1K accomplishes its focused beam through an ellipsoidal reflector as it is the most efficient geometric shape for collecting light from a point source and refocusing it to another focal point some fixed distance away. Since an arc lamp is not a perfect point source, the resulting focal spot size is not infinitesimally small. Practically speaking, it is about 7mm~10mm in diameter depending on the wattage and arc gap size of the arc lamp itself. Another restriction of the Model 200-1K arc lamp housing is its fixed aperture as determined by its f/2.5 ellipsoidal reflector. For optimum light transfer, the component being illuminated should have a matching aperture value. Fortunately, Sciencetech manufactures sample chambers and monochromators/spectrographs that also have an f/2.5 input aperture. For such components, the Model 200-1K is an ideal light source for its efficient light collection and optimal light transfer capability. However, it is still not recommended for applications that require a very small focal spot.

Comparison with Model 201-1K

The difference between the Model 200-1K and Model 201-1K high power arc lamp housings is the geometry of the output beam. The Model 200-1K outputs a focused beam while the Model 201-1K outputs a collimated parallel beam. However, the Model 201-1K can also output a focused beam by attaching refractive condensing optics to its exit port. The advantage of the Model 200-1K is its efficient light collection ability which allows it to focus more power onto a point. The advantage of the Model 201-1K (with refractive condensing optics so that it also generates a focused beam) is its smaller focal spot, ability to generate any f number aperture by attaching different refractive condensing optics, and a more uniform beam. For very fine focal spot applications, the Model 201-1K actually achieves higher power density than the Model 200-1K.

Safety Exit Port Window

The exit port is covered with a 4.5” diameter clear borosilicate glass safety window which filters out most harmful UV rays below 360nm. For UV applications, this safety glass can be replaced with an optional fused silica version which allows all wavelengths including UV light above 200nm to pass through. These safety windows also protect the user against glass shrapnel should the high pressure arc lamp explode inside.

Version Description	Version Code	Version Price (USD)
For Xenon Arc lamps (with glass window)	- Xe	
For Mercury Xenon Arc lamps (with glass window)	- HgXe	

Ellipsoidal Reflector

The f/2.5 ellipsoidal reflector is the most expensive component of the arc lamp housing and accounts for over 50% of its manufacturing cost. It is made of a precision diamond turned solid aluminum piece to bear the exact geometry of an ellipsoidal surface for accurate refocusing of the arc lamp light to the small focal point in front of the housing. It is also thermally balanced to assure it does not warp under tremendous heat from the arc lamp as the interior of the arc lamp housing can reach 200°C. It is also specially coated to reflect all wavelengths ranging from ultraviolet to infrared.

Cooling

The interior of the Model 200-1K arc lamp housing is hot enough to boil water. To keep it cooled, a blower at the top draws air from the back of the housing and blows it over the arc lamp. Please note that forced air-cooling should not be used on ozone producing arc lamps as it would blow the corrosive and hazardous ozone gas to the outside work environment. For ozone producing lamps, a water-cooled option is available such that the ozone can remain inside the arc lamp housing.

Optical Beam Height

The centre beam line of the exit port is 114.3mm (4.5 inches) above the base of the lamp housing.

Supported Arc Lamps

The arc lamp is mounted in a horizontal position inside the Model 200-1K. The exit port is at the cathode end of the lamp and shines horizontally outwards. Due to this orientation, mercury arc lamps are not recommended as their service life is greatly shortened in horizontal operation rather than vertical operation. The service life of xenon arc lamps are not affected by orientation. The Model 201-1K accommodates short arc lamps ranging from 450W to 1600W which are sold separately. Please see “Arc Lamp Selection” in group accessories for a range of available xenon and mercury-xenon arc lamps. Since each arc lamp type and wattage has its own socket style and cooling shroud requirement, it must be specified at the time of ordering. The arc lamp housing will not be able support another type or wattage of arc lamp after it is manufactured unless the optional “Interchangeable Xe and HgXe Lamps Modular Adapter” is ordered.

Power Supply

The Model 200-1K arc lamp housing is designed to work with Sciencetech Model 500-500 (500W), Model 500-1K (1000W), and Model 500-1.5K (1500W) adjustable power supplies with built-in igniters. These power supplies are highly stabilized switching DC power supplies that can be adjusted above or below their rated power. For example, the 500W power can be adjusted between 350W~500W, the 1000W power supply can be adjusted between 800W~1200W and the 1500W power supply can be adjusted between 1000W~1900W. An optional Optical Feedback Unit (Model FS-02) with a built-in fibre optic light sensor is also available to monitor the light intensity of the arc lamp and automatically adjust the power supply to maintain a consistent non-fluctuating intensity. The Model 200-1K arc lamp housing can also be used with other non-Sciencetech DC arc lamp power supplies as long as the power supply provides both DC output for lamp (typically 17~35VDC) and a separate 220~240VAC for its cooling fan. The power supply must also have its own arc lamp ignition.

Please note that Sciencetech's Models 500-500 (500W), 500-1K (1000W), and 500-1.5K (1500W) power supplies are designed for 220~240VAC input. However, the Model 500-500 (500W) power supply can also be operated at 120VAC, but the cooling fan inside the arc lamp housing would need to be converted to 120VAC as well. Please order product code 20X-1K-CF120VAC for this 120VAC cooling fan conversion.

Other Arc Lamp Housing Models

Please consider the Model 200-100 arc lamp housing for lower wattage lamps between 75W~200W. The Model 200-100 has the same ellipsoidal reflector design as the Model 200-1K for efficient light collection and focused output beam. Also available is the Model 201-1K arc lamp housing that produces a collimated parallel output beam. The Model 201-1K supports the same set of 450W~1000W arc lamps and is compatible with the same models 500-500 and 500-1K adjustable power supplies as the Model 200-1K. However, the Model 201-1K is less efficient in light collection, but can achieve a smaller focal spot of any f number with refractive condensing optics attachments and produces a more uniform intensity beam.

Customization

Sciencetech has built many customized versions of the Model 200-1K arc lamp housing. Examples include an f/4 ellipsoidal reflector version, a vertically mounted version for mercury lamps, and even a gold coated reflector version for IR applications. If you require a certain feature in this arc lamp housing that is not shown, please contact our Applications Specialists at sales@sciencetech-inc.com for a custom quotation.

ACCESSORIES

UV Fused Silica Safety Window (>200nm)
(200-180) $ USD

If the application requires UV light, the standard safety glass window on the arc lamp housing should be replaced with a UV grade fused silica safety window to allow ultraviolet light above 200nm to pass through. The standard glass safety window blocks almost all UV light below 350nm from leaving the arc lamp housing. Please note that UV rays are harmful and therefore protective eyewear and clothing should be worn. Both Xenon (Xe) and Mercury Xenon (HgXe) emits UV light.

Interchangeable Xe and HgXe Lamps Modular Adapter
(200-1K-ILC) $ USD

The 200-1K and 201-1K arc lamp housings are typically designed to accommodate either Xenon (Xe) or Mercury Xenon (HgXe) lamps, but not both. The reason is that each lamp type has a different socket base and cooling requirement (the Mercury-Xenon needs to run hotter to assure that the Mercury is completely vaporized inside the lamp). This interchangeable option allows the user to change the lamp socket and heat shroud cover inside the 200-1K/201-1K arc lamp housing so that it can accommodate either Xenon or Mercury Xenon lamps. The customer would need to replace the anode and cathode connections and possibility do some minor re-alignment of the lamp for optimum performance after a lamp type changeover. Please also note that the user should purchase the HgXe version power supply as that will work for both Xenon and Mercury Xenon but not vice versa.

Gold Coated Ellipsoidal Reflector
(200-ellipsoidal-G)

The ellipsoidal reflector can be gold coated for better IR reflectivity. This price reflects the additional gold coating, and not the ellipsoidal reflector itself.

120VAC Cooling Fan
(20X-1K-CF120VAC) $ USD

The standard Models 201-1K and 200-1K high power arc lamp housings utilize a 230VAC cooling fan. Therefore the arc lamp power supply connected to it must supply both a DC voltage (typically 17DC~35DC) for the arc lamp and also a 230VAC for the cooling fan. Sciencetech Models 500-500 (500W), 500-1K (1000W), and 500-1.5K (1500W) power supplies are all capable of doing this. However, Sciencetech Model 500-500 (500W) power supply can also be operated at 120VAC, in which case the cooling fan of the arc lamp housing would need to be replaced with a 120VAC version as well. This option is also required if a non-Sciencetech arc power supply that only generates 120VAC is used with the arc lamp housing.

Water-Cooling (20X-1K-WC)

The standard arc lamp housing is forced air-cooled with a blower. However, this should not be used with ozone producing arc lamps as it would blow the corrosive and hazardous ozone outside the housing into the work environment. A water-cooled version that leaves the ozone inside the arc lamp housing is far safer. Please select this option if selecting an ozone producing lamp (usually for UV applications). This option only provides a water-cooling loop inside the arc lamp housing. An additional external water recirculation unit is required.

Calibrated Light Source
(CalibLight) $ USD

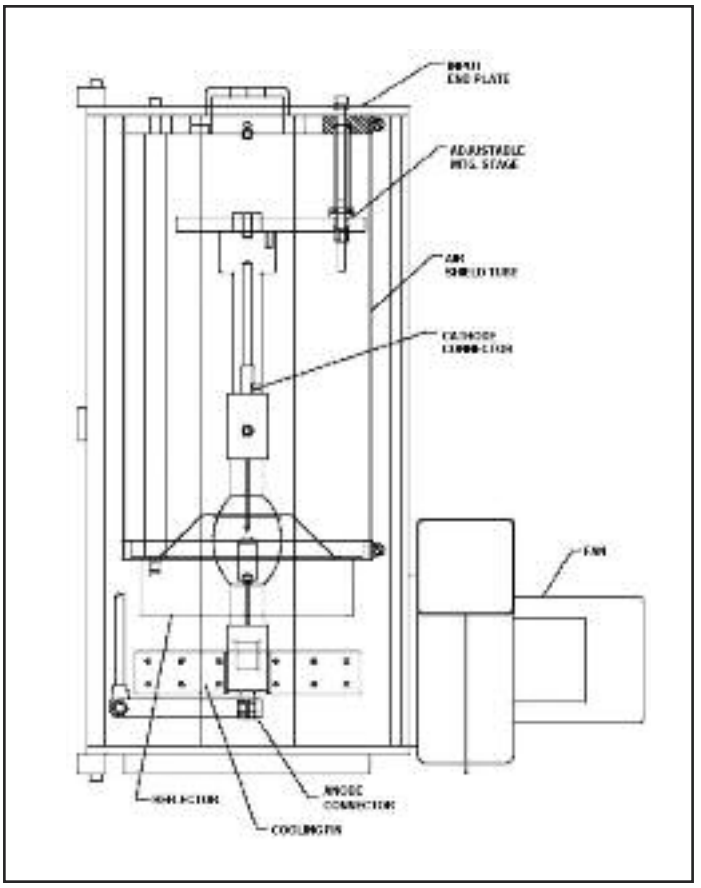
This is a calibration service that documents this particular unit's spectral characteristic of the lamp with reference to NIST (U.S.) or NPL (U.K.) standard. Realistically, this service should be purchased with an entire light source system including arc lamp housing and power supply to assure a constant reference condition.

Replacement F/2.5 Ellipsoidal Reflector for 200-1K Housing (200-1K-F2.5) $ USD

This is a replacement 5.4" diameter F/2.5 ellipsoidal reflector for the 200-1K arc lamp housing. Its high cost is due to its diamond turned machining process. The 200-1K arc lamp housing already includes this reflector, so this item only needs to be purchased should the original reflector get damaged.

Technical Specifications

- 5.5" Diameter Diamond Turned Ellipsoidal Reflector
- 4.5" Diameter Exit Port with Standard Glass Safety Window
- Available UV Fused Silica Safety Window
- Ellipsoidal Reflector Aperture: f/2.5
- Approx Focal Spot Location: 239mm in front of Exit Port
- Spot Size: 9mm for 1000W Xe Lamp
- Removable Back Panel For Lamp Replacement
- Painted Aluminum Body
- + and - Terminals for Arc Lamp Power (17DC~35DC typical)
- Live and Neutral Terminals for Cooling Fan (220~240VAC)
- Centre Beam Line Height: 114.3mm (4.5") above base
- Dimensions: 470mm x 216mm x 216mm x 222mm (18.5" x 8.5" x 8.75")



Group Accessories

Please check the appropriate sections in the catalogue for the following:

450W~1600W Arc Lamp Selection	(arclamps4)
High Power Arc Lamp Power Supplies	(arcPSHi2)
High Power Output Beam Coupling Optics	(LightCouplingHigh)

1600W Xenon, ozone-free
Ver. (code: 1001k6XOF) $ USD

The Sciencetech Model 500-1.5K power supply is designed for use with this lamp (24VDC, 65A, 6000cd, 650cd/mm2, Avg. life 2400 hours, length 370mm).

450W~1600W Arc Lamp Selection

450 W Xenon, ozone-free
Ver. (code: 100450XOF) $ USD

This is the standard Xenon lamp recommended for the Model 500-500 Power Supply. Although it is rated at 450W, it can be driven at 500W with little effect on its service life. (18V 25A, 1300cd, 350cd/mm2, Avg. Life 2000 hours, length 260mm)

450 W Xenon, high UV output
Ver. (code: 100450XUV) $ USD

The Sciencetech Model 500-1K power supply is designed for this lamp 18V, 25A, 1300cd, 350cd/mm2, Avg. life 2000 hours). This lamp utilizes a silica envelope for high ultraviolet output above 260nm. Please beware that this lamp produces corrosive and hazardous ozone gas when operated and should only be used inside a water-cooled enclosed housing.

500W Xenon, ultra-bright and ozone-free
Ver. (code: 100500XOFB -XOFB) $ USD

This Xenon Arc lamp has a very small arc gap of 0.7mm x 0.8mm, allowing it to achieve an incredible 260,000 cd/cm^2. This is considerably higher than a typical 500W Xenon arc lamp of only 40,000 cd/cm^2. This arc lamp is ideal in applications where a small focal spot is required, such as going through the input of a monochromator slit. Unfortunately, the service life of this arc lamp is very short, only 200 hrs compared to 2000hrs. The operating voltage is 14V at 30A.

1000 W Xenon
Ver. (code: 1001kX 1001kX) $ USD

The Sciencetech Model 500-1K power supply is designed for this lamp (23VDC, 43.5A, 3000cd, 400cd/mm2, Avg. life 1000 hours, length 215mm). Please note that this arc lamp produces ozone and therefore should be used inside a water-cooled housing.

1000 W Xenon, ozone-free
Ver. (code: 1001kXOF) $ USD

The Sciencetech Model 500-1K power supply is designed for this lamp (23VDC, 43.5A, 3000cd, 400cd/mm2, Avg. life 1000 hours, length 215mm)

1000 W Mercury-Xenon, ozone-free
Ver. (code: 1001kMX) $ USD

The Sciencetech Model 500-1K power supply is designed for use with this lamp. (25V, 40A, 800 hours).

High Power Output Beam Coupling Optics

200-1K Arc Lamp Housing Output Optical Coupling Unit
Ver. (code: 200-1K-OCU) $ USD

This is a coupling unit that mates the Model 200-1K arc lamp housing to the input port of the 9055 monochromator. Its purpose is to assure that the focal point of the arc lamp housing light source (approx 9mm diameter for a 1000W lamp) is geometrically positioned at the input port of the 9055 monochromator and that the light beam is contained inside. This coupling unit has a removable extension centre piece in the middle of its beam path such that it can be replaced with either Sciencetech Model FW-6 motorized filter-wheel or Sciencetech Model FH air-cooled filter holder for mounting in between the arc lamp housing and monochromator. Please note that an IR filter is necessary if the input slit is smaller than the 9mm focal spot beam of a 1000W Xenon lamp, or otherwise the input slit could get damaged by excessive heat.

IR Absorbing Water Filter
(Fused Silica Window) - Aluminum, 3
Ver. (code: 01-8711 0187122) $ USD

(Glass Window) - Aluminum, 3
Ver. (code: 01-8712 0187122) $ USD

IR absorbing waters are valuable tools as they protect other filters and optical components from IR damage while still transmitting 200 to 905nm wavelengths. Liquid filters are useful for removing infrared light from 1000 to 3000 nm. All models have a re-circulated water jacket to cool the filter itself - excellent for high power applications. Sciencetech offers IR filters in both aluminum and stainless steel models. Aluminum filters are used in experiments where only distilled water is used. Stainless steel filters are used when the absorbing media is water, copper sulfate or nickel sulfate.

High Power Arc Lamp Power Supplies

500W Adjustable Power Supply
- Xenon
Ver. (code: 500-500 -Xe) $ USD

- Mercury-Xenon
Ver. (code: 500-500 -HgXe) $ USD

For both Xe and Hg-Xe arc lamps up to 500W. The arc lamp is powered through an external adjustable DC power supply capable of producing 350W~500W. The power supply has a built-in igniter and a manually operated control panel with LCD display for fine voltage, current, and power adjustments. The power supply auto selects the voltage and current between Xenon and HgXe lamps.

1KW Adjustable Power Supply
- Xenon
Ver. (code: 500-1K -Xe) $ USD

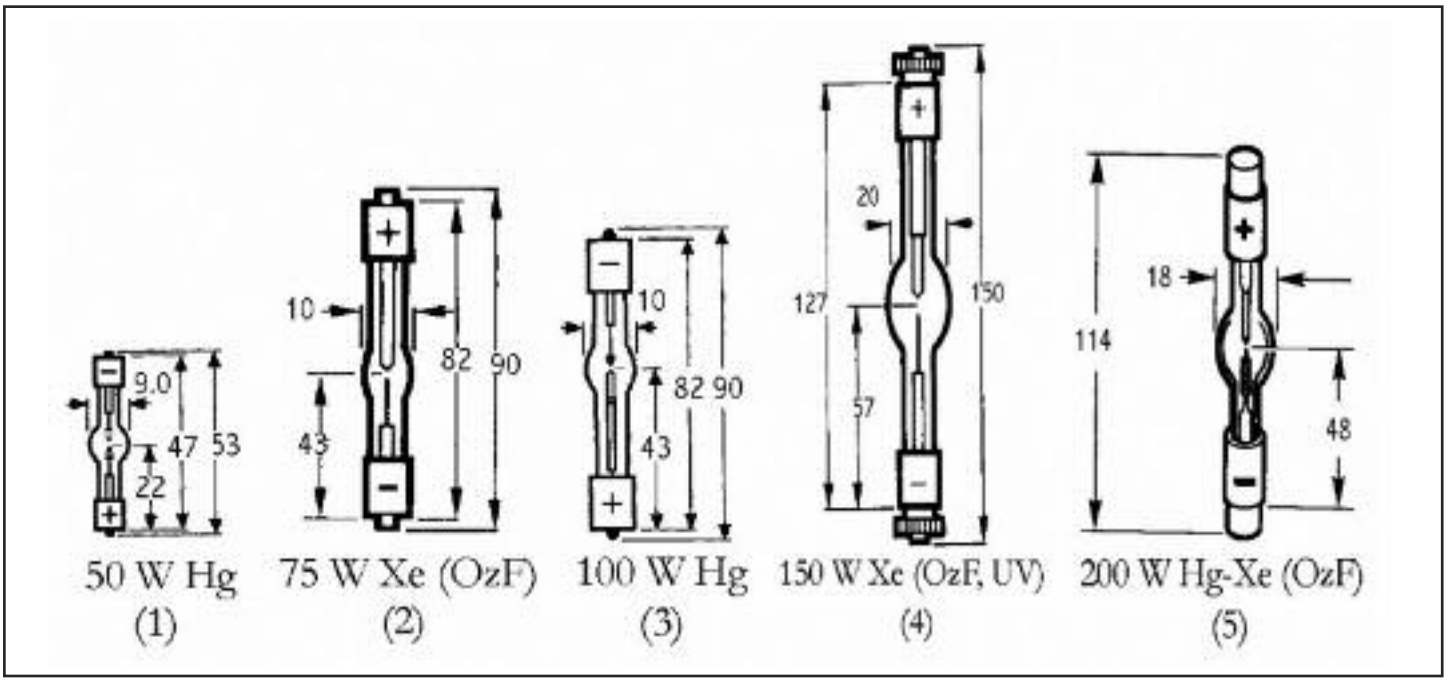
- Mercury-Xenon
Ver. (code: 500-1K -HgXe) $ USD

The Sciencetech 500-1K is a DC power supply for Xenon (Xe) and Mercury Xenon (Hg-Xe) arc lamps from 800 W to 1.2kW. It can drive lamps with a voltage of up to 36 V and currents up to 50 A within a power limitation excluding cable resistance and starter voltage losses. The switch mode design allows for a compact system.

1.5KW Adjustable Power Supply
- Xenon
Ver. (code: 500-1.5K -Xe) $ USD

- Mercury-Xenon
Ver. (code: 500-1.5K -HgXe) $ USD

This power supply is used for 800W, 1000W, and 1200W Xenon, Mercury Xenon, and Mercury lamps. DC 1000W~1900W

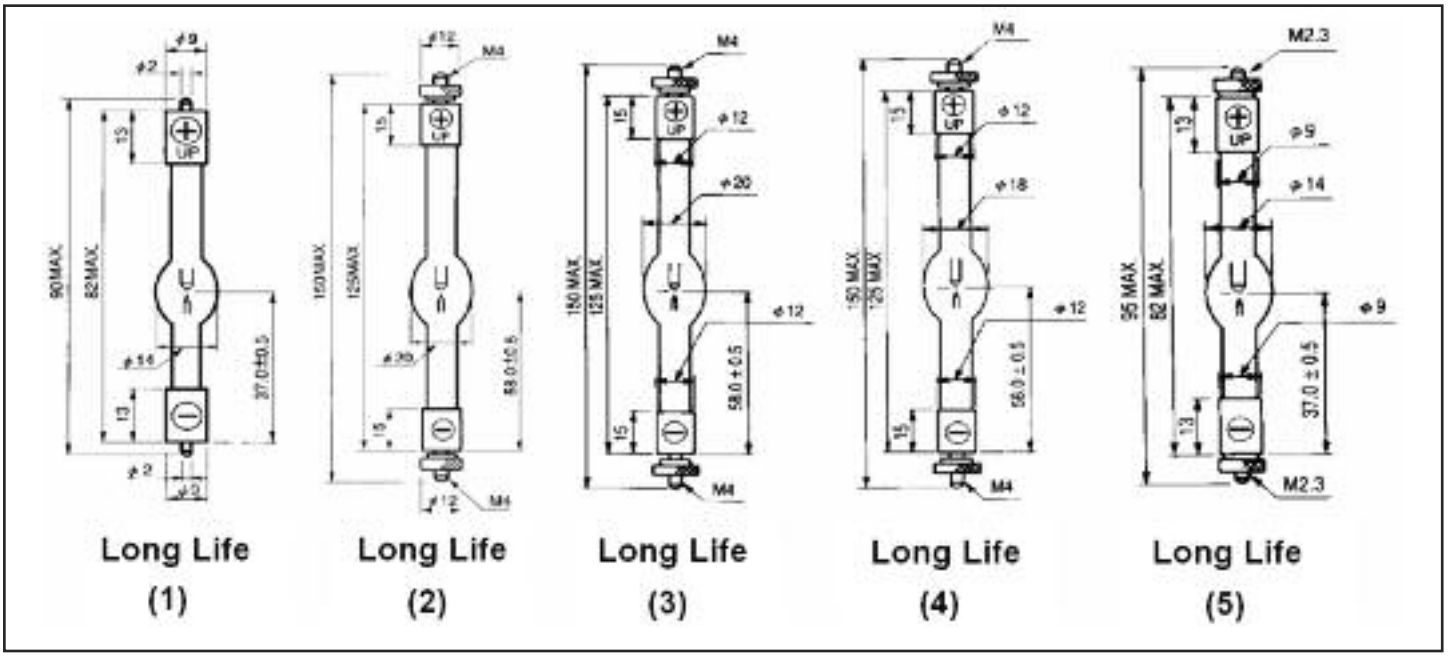


Low Power Arc Lamp Bulbs to 200 W

Model No.	Lamp Type	Special Features	Diagram No.
100-50M	50 W Hg		1
100-75XOF	75 W Xe ozone-free	Small, bright arc	2
100-75X	75 W Xe	Small, bright arc	2
100-100M	100 W Hg	Brightest possible source, short life	3
100-150X	150 W Xe		4
100-150XUV	150 W Xe, UV	UV silica envelope for high UV output	4
100-150XOF	150 W Xe, ozone-free		4
100-200MX	200 W Hg-Xe		5
100-200MXOF	200 W Hg-Xe, ozone-free		5

Technical Specifications for Arc Lamp up to 200 Watts

Model No.	DC Voltage (V)	Current (A)	Light Intensity(cd)	Luminous Flux (lm)	Average Luminan (cd/mm^2)	Arc Size (mm^2)	Average Life (hrs)	Diameter (mm)
100-50M	22	2.3	150	1300	900	0.2 x 0.35	200	9.5
100-75XOF	14	5.4	100	1000	400	0.25 x 0.5	400	10
100-75X	14	5.4	100	1000	400	0.25 x 0.5	400	10
100-100M	20	5	260	2200	1700	0.25 x 0.25	200	10
100-150X	20	7.5	300	3000	150	0.5 x 2.2	1200	20
100-150XUV	20	7.5	300	3000	150	0.5 x 2.2	1200	20
100-150XOF	20	7.5	300	3000	150	0.5 x 2.2	1200	20
100-200MX	20-25	8-9.5	600	4500	222	0.5 x 1.5	1000	18
100-200MXOF	20-25	8-9.5	600	4500	222	0.5 x 1.5	1000	18



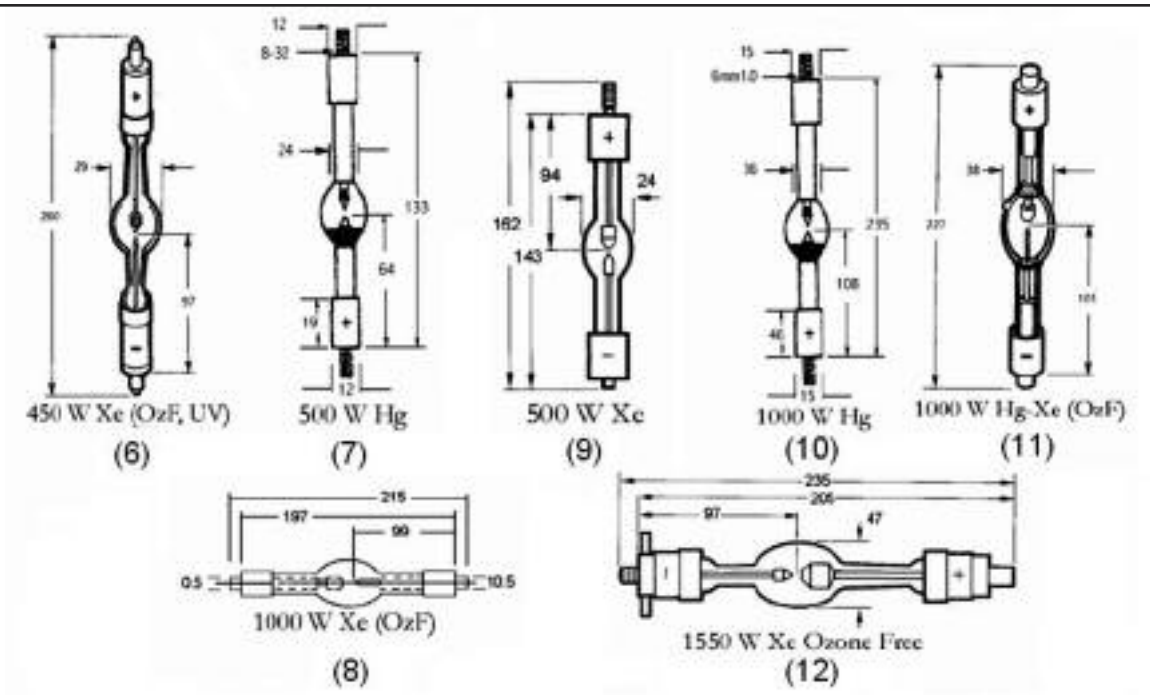
Model No.	Lamp Type	Special Features	Diagram No.
100-75XLL	75 W Xe	Long life, high stability*	1
100-150XLL	150 W Xe	Long life, high stability*	2
100-100MXLL	100 W Hg-Xe	Long life, high stability*	3
100-150MXLL	150 W Hg-Xe	Long life, high stability*	4
100-200MXLL	200 W Hg-Xe	Long life, high stability*	5

* Available ozone-free.

Technical Specifications

Model No.	DC Voltage (V)	Current (A)	Arc Length (mm)	Output Stability after 20 mins.		Average Life
				Drift (%)	Fluctuation (%)	
100-75XLL	15	5.4	1.3	±0.5	1.0	2000
100-150XLL	20	7.5	2.5	±0.5	1.0	2500
100-100MXLL	18	5.5	1.3	±0.5	1.0	1000
100-150MXLL	20	7.5	1.7	±0.5	1.0	2000
100-200MXLL	24	8.0	2.0	±0.5	1.0	2000

Note: Prices are shown in the product lamp housing sections.



High Power Arc Lamp Bulbs from 250W to 1.6 kW

Model No.	Lamp Type	Special Features	Diagram No.
100-450X	450 W Xe		8
100-450XUV	450 W Xe, UV	UV Silica envelope for high UV output	8
100-450XOF	450 W Xe, ozone-free		8
100-500X	500 W Xe	Very bright source, short life	11
100-500M	500 W Hg		9
100-1kXOF	1000 W Xe, ozone-free		10
100-1kX	1000 W Xe		10
100-1kM	1000 W Hg		12
100-1kMXOF	1000 W Hg-Xe, ozone-free		13
100-1.55XOF	1.55 kW Xe, ozone-free		14

Technical Specifications for Arc Lamp Bulbs from 250W to 1.6KW

Model No.	DC Voltage (V)	Current (A)	Light Intensity (cd)	Luminous Flux (lm)	Average Luminan (cd/mm²)	Arc Size (mm²)
100-450X	18	25	1300	13000	350	0.9 x 2.7
100-450XUV	18	25	1300	13000	350	0.9 x 2.7
100-450XOF	18	25	1300	13000	350	0.9 x 2.7
100-500X	17	30	1500	13000	600	0.7 x 0.8
100-500M	75	6.7				1.1 x 4.1
100-1kXOF	23	43.5	3000	30000	400	1.0 x 3.0
100-1kX	23	43.5	3000	30000	400	1.0 x 3.0
100-1kM	80	12.5				3.0 x 2.6
100-1kMXOF	32-38	28.5	5000	40000	360	1.0 x 3.0
100-1.55XOF	23	65	5500	60000	700	1.5 x 3.3

Quartz Tungsten Halogen (QTH) Lamp Housing

Sciencetech's Model TH3 lamp housing allows for vertically mounted 50W~1000W DC operated Quartz Tungsten Halogen (QTH) filament lamps. Such lamps produce a large VIS~NIR output and some UV light. The spectral output is smooth and approximates a 3300K black body. Since each wattage lamp has its own socket style, a QTH lamp housing may only accommodate the selected wattage lamp once the socket style is specified. The unit is forced air-cooled with a blower at the base that draws air from the top intake to the bottom of the housing. The lamp socket is mounted vertically on alignment pins such that the lamp's filament can be properly centered to the housing's back spherical reflector and front light exit port for optimum light output efficiency. The front light exit port includes one 1" borosilicate glass collimating lens to output parallel rays. One QTH lamp (bulb) is included, but the stabilized power supply is external to the lamp housing and is sold separately.

Optical Configuration

The QTH lamp is mounted in a vertical position with the exit port on the side wall. A back spherical reflector mounted on adjustable alignment pins redirects the rear illumination to the forward exit port thereby doubling the amount of light collected.

Beam Collimation

A 1 inch diameter collimating lens is mounted at the exit port of the QTH lamp housing to produce near parallel output rays (f/1.5). This lens is made of borosilicate glass and filters most harmful UV rays below 360nm. For UV applications, this lens can be replaced with a fused silica version which allows all wavelengths including UV light above 200nm to pass through. Please see "1 Inch Fused Silica Lens Upgrade" accessory for details.

Highlights

- Scientific Grade Lamp Housing
- Collimated Uniform 1 Inch Diameter Output Beam
- Supports 50W~1000W Quartz Tungsten Halogen (QTH) Lamps
- Forced Air Cooled
- Available Refractive Condensing Optics Attachments
- Available Stabilized DC Power Supplies
- Vertically Mounted QTH filament Lamp
- Side Exit Port with Back Spherical Reflector

Focusing Optics

Refractive condensing optics can be attached to the exit port of the Model TH3 lamp housing to focus the light onto a fine focal spot (Please see "1 inch Diameter Beam Coupling Optics Selection" Group Accessories for details). Refractive condensing optics are excellent at condensing light onto a small spot such as through a monochromator slit or into a fibre bundle. More importantly, refractive condensing optics can be set to any aperture value allowing it to better match the f number of the device it is illuminating for maximum light transfer efficiency. However, this aperture value must be specified at the time of ordering, as it is a tedious and time consuming process.

Air Cooled

The Model TH3 lamp housing has a forced air-cooled fan that draws air from the bottom of the housing and blows it out the top.

Optical Beam Height

The centre beam line of the exit port is 114.3mm above the base of the lamp housing. This can be too high for some optical systems. To lower the centre beam line, the lamp housing can be rotated 90 degrees about its exit port such that it lies horizontally. An optional horizontal mounting bracket is available for this purpose. Although arc lamps should not be operated horizontally as that shortens their service life, this is not the case with QTH lamps. QTH lamps can be operated either horizontally or vertically without affecting their service life.

Version Description	Version Code	Version Price (USD)
Socket for 50W QTH Lamps	- 50	
Socket for 100W QTH Lamps	- 100	
Socket for 250W QTH Lamps	-250	
Socket for 1000W QTH Lamps	-1000	

Supported Arc Lamps

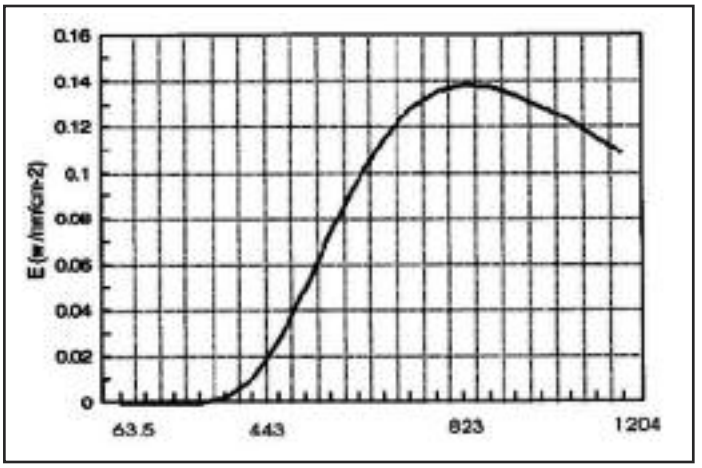
The Model TH3 housing supports 50W~1000W Quartz Tungsten Halogen (QTH) lamps which are sold separately. Please see “QTH Lamp Selection” in group accessories for a range of available QTH lamps. Since each QTH lamp wattage has its own socket style, it must be specified at the time of ordering. The QTH lamp housing may not be able support another wattage lamp after it is manufactured.

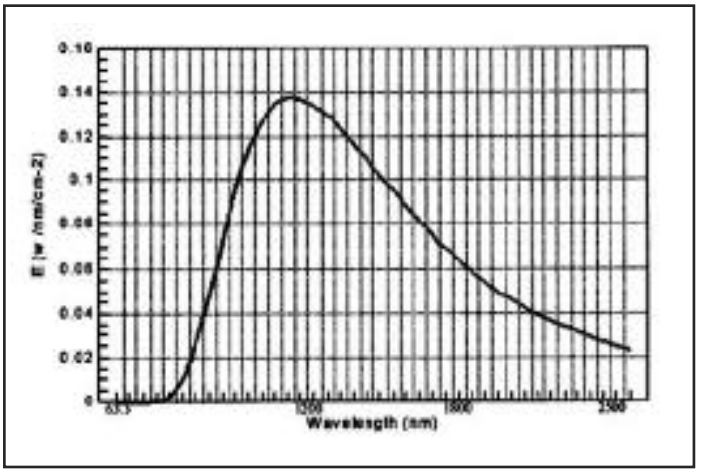
Power Supply

The Model TH3 lamp housing is designed to work with a variety of Sciencetech fixed and variable QTH DC power supplies ranging from 50W to 1000W. The Model TH3 lamp housing can also be used with other DC QTH lamp power supplies as long as the power supply provides both DC output for the QTH lamp and 120VAC output for its cooling fan.

Spectral Characteristics of QTH Light

Quartz Tungsten Halogen (QTH) lamps provide a fairly smooth output of Visible and IR light. Some UV light is also produced, but the level drops off considerably lower than 450nm. Its spectral curve approximates that of a 3300K black body. See below:





Other Light Sources

If the user requires high levels of UV light, we recommend Sciencetech's line of deuterium light sources. Ifthe user requires a broader spectral range from UV to IR, then we recommend Sciencetech's line of arc lamp sources.

Customization

Sciencetech has built many customized versions of the Model 200-100 arc lamp housing. Examples include a water cooled version, a 2 inch diameter output beam version, and a horizontally mounted version to lower its optical beam height to match that of a table top system. If you require a certain feature in this arc lamp housing that is not shown, please contact our Applications Specialists at sales@sciencetech-inc.com for a custom quotation.

ACCESSORIES

1 Inch Fused Silica Lens Upgrade
(for UV applications)(CON1-1L) $ USD

A single 1 inch borosilicate glass collimating lens at the exit port is standard on the Model 201-100 and TH3 lamp housings. This lens not only improves light collection efficiency to f/1.5, but also filters harmful UV rays while allowing visible and IR light to pass through (λ>360nm). For the Model 201-100 arc lamp housing, it also acts as a safety window should the high pressure arc lamp explode inside the housing. This option upgrades the borosilicate glass to fused silica such that UV wavelengths (λ>200nm) can pass through as well. Please note that some UV lamps produce dangerous levels of ozone and should be trapped inside the lamp housing.

Horizontal Mounting Bracket
(201-100-HM) $ USD

The lamp housing can be rotated 90 degrees about its exit port such that the lamp lies horizontally instead of vertically. This is useful in lowering the optical beam centre line to match the optical centre line of an optical system. The Horizontal Mounting Bracket has adjustable height legs to support 5", 4" and 3" optical centre line heights. The horizontal bracket is essentially an "L" shape bracket. For the Model 200-100 arc lamp housing, please note that mercury arc lamps should not be operated horizontally, otherwise their service life would be shortened significantly. For the Model TH3 QTH lamp housing, QTH lamps can be operated vertically or horizontally.

Calibrated Light Source
(CalibLight) $ USD

This is a calibration service that documents the particular unit's spectral characteristic of the lamp with reference to NIST (U.S.) standard. Realistically, this service should be purchased with an entire light source system including a lamp housing, specific lamp, and power supply to ensure a constant reference condition.

Technical Specifications

- 1 inch (25mm) diameter exit port, with f/1.5 collimating lens
- Removable top for lamp replacement
- Three point adjustable pins for back spherical reflector alignment
- Aluminum Body, Black Anodized
- + and - Terminals for Lamp Power (12DC~24DC typical)
- Live and Neutral Terminals for Cooling Fan (115~120VAC)
- Available Refractive Condensing Optics Attachments
- Distance Centre of Lamp to Exit Port: 30mm
- Centre Beam Line Height: 114.3mm (4.5") above base
- Dimensions: 101.6mm x 101.6mm x 224mm (4" x 4" x 8.815")

Group Accessories

Please check the appropriate sections in the catalogue for the following:

1 Inch Diameter Beam Coupling Optics Selection	(LightCoupling1In)
QTH Stabilized Power Supplies	(QTHPSDC)
QTH Lamps Selection	(QTHlamps1)

QTH STABILIZED POWER SUPPLIES

50W Fixed DC Stabilized Linear Power Supply For QTH Ver. (code: 500-105-QTH) $ USD

Sciencetech Model 500-105-QTH is an external 50W fixed power supply for QTH lamps. Being a linear power supply as opposed to a switching power supply, it produces a highly stabilized 12VDC noise-free output. The unit accepts both 110~120VAC and 220~240VAC input.

100W Fixed DC Stabilized Linear Power Supply For QTH Ver. (code: 500-110-QTH) $ USD

Sciencetech Model 500-110-QTH is an external 100W fixed power supply for QTH lamps. Being a linear power supply as opposed to a switching power supply, it produces a highly stabilized 12VDC noise-free output. The unit accepts both 110~120VAC and 220~240VAC inputs.

250W Fixed DC Stabilized Linear Power Supply For QTH Ver. (code: 500-125-QTH) $ USD

Sciencetech Model 500-125-QTH is an external 250W fixed power supply for QTH lamps. Being a linear power supply as opposed to a switching power supply, it produces a highly stabilized 24VDC noise-free output. The unit accepts both 110~120VAC and 220~240VAC inputs.

50W~200W Adjustable Stabilized DC Linear Power Supply for QTH - Ver. (code: 550-200/q) $ USD

Sciencetech Model 550-200/q is an external 0W~200W adjustable power supply for QTH lamps. Being a linear power supply as opposed to a switching power supply, it produces a highly stabilized 12VDC~24VDC noise free output. Although it can be used with 250W QTH lamps, please note they operate slightly under-powered at 200W. The unit accepts both 110~120VAC and 220~240VAC inputs.

1000W Fixed DC Stabilized Switching Power Supply for QTH - Fixed 1000W DC Stabilized QTH PS (115~120VAC) Ver.(code: 500-1K-QTH - 120VAC) $ USD

Fixed DC stabilized switching Power Supply for 1 kW QTH source Sciencetech Model 500-1K-QTH is an external QTH 1000W fixed power supply. The unit accepts 120VAC and 240VAC inputs. input voltage 120/240 VAC. Input Frequency: 60Hz. Line Regulation: ± 0.2%. Load Regulation: ± 0. 5% from min to max load. Output Ripple: < 1% of output or 200Vpp, whichever is smaller (DC to 20MHz bandwidth) Efficiency: 75% to 85%. Operating Temperature: 0 - 55°C, ambient for full output power. Storage Temperature: –30°C to 85°C

1000W Adjustable AC Stabilized Power Supply For QTH Ver. (code: 500-1k/a) $ USD

QTH LAMP SELECTIONS

50W QTH Lamp - High Intensity
(code: Q5012S) $ USD

12 VDC, 1600 lm, 50 hrs, Filament = 3.3mm x 1.6mm, Colour Temp = 3350K, Socket = G6, 35. Please note that the Model TH3 QTH Lamp Housing includes one free lamp. Only order this for additional spare lamps.

50W QTH Lamp - Long Life
(code: Q5012L) $ USD

12 VDC, 930 lm, 2000 hrs, Colour Temp = 3000K, Socket=GY6, 35. Please note that the Model TH3 QTH Lamp Housing includes one free lamp. Only order this for additional spare lamps.

100W QTH Lamp - High Intensity
(code: Q10012S) $ USD

12 VDC, 3600 lm, 50 hrs, Filament = 4.2mm x 2.3mm, Colour Temp = 3450K, Socket = GY6, 35 Please note that the Model TH3 QTH Lamp Housing includes one free lamp. Only order this for additional spare lamps.

100W QTH Lamp - Long Life
(code: Q10012L) $ USD

12 VDC, 2800 lm, 2000 hrs, Filament = 4.7mm x 2.7mm, Colour Temp = 3300K, Socket = GY6, 35. Please note that the Model TH3 QTH Lamp Housing includes one free lamp. Only order this for additional spare lamps.

250W QTH Lamp - High Intensity
(code: Q25024S) $ USD

24 VDC, 10,000 lm, 50 hrs, Filament = 7mm x 3.5mm, Colour Temp = 3550K, Socket = G6, 35. Please note that the Model TH3 QTH Lamp Housing includes one free lamp. Only order this for additional spare lamps.

250W QTH Lamp
(code: Q25024) $ USD

24 VDC, 9,000 lm, 300 hrs, Filament = 8mm x 4mm, Colour Temp = 3450K, Socket = G6, 35. Please note that the Model TH3 QTH Lamp Housing includes one free lamp. Only order this for additional spare lamps.

1000W QTH Lamp - For 120VAC Operation
(code: Q1K120AC) $ USD

120V, 27,500 lm, 300 hrs, Filament = CC-8, Colour Temp=3200K, Socket=G6, 35. Please note that the Model TH3 QTH Lamp Housing includes one free lamp. Only order this for additional spare lamps.

1000W QTH Lamp - For 230VAC Operation
(code: Q1K230AC) $ USD

230V, 27,500 lm, 75 hrs, Filament = 14mm x 14mm, Colour Temp = 3200K, Socket = G6, 35. Please note that the Model TH3 QTH Lamp Housing includes one free lamp. Only order this for additional spare lamps.

1 INCH DIAMETER BEAM COUPLING OPTICS SELECTION

Filter Box Holder
- with one 1 inch filter mount
Ver. (code: FH 1-1) $ USD

- with two 1 inch filter mounts
Ver. (code: FH 1-2) $ USD

This is an aluminum filter holder box that can accommodate up to 2 filters in series. Each filter is mounted on a removable slide that is screwed into the filter holder box. The filters can be individually removed by unscrewing the slide from the holder. The filter holder and slides accept both 1" and 2" filters which are sold separately. Additional coupling optics maybe required to secure the filter holder onto the input of a monochromator/spectrograph or output of a light source.

1 Inch Beam Condensing Assembly
- Glass (Visible and IR Light)
Ver. (code: CON1-2L /G) $ USD

- Fused Silica (UV)
Ver. (code: CON1-2L /FS) $ USD

Combined with the original collimating lens of the arc lamp housing, this beam-condensing assembly acts as a 2 piece plano lens system that focuses the 1 inch diameter output beam onto a point. The lens in the arc lamp housing would collimate the light while the additional lens in the condensing assembly would refocus it to a point. The beam - condensing assembly mates onto the front of the arc lamp housing output port so that the additional lens is in series with the original arc lamp housing lens. Depending on the specifications and distance between the two plano lenses inside the beam condensing assembly, the output beam can be condensed into any f number. The f number must be specified at the time of ordering and is typically used to match the input f number of a monochromator, spectrograph, or sample chamber that the light source is used to illuminate. For illuminating into a fibre optic bundle, please add the Fibre Bundle Coupler (Model FIB4). The standard glass optics version is for visible and IR applications as glass filters harmful UV rays. A fused silica version that does not filter UV rays is also available for UV applications. Unit cost includes the alignment labour to match the specified f number, which is a time-consuming process.

Fiber Bundle Coupler - 1 Inch diameter flange
Ver. (code: FIB4 1inch) $USD

This Fibre Bundle Coupler mates a Sciencetech Beam-Condensing Assembly to the input end of a fibre bundle such that the light collected by the beam condensing assembly is focused into the fibre bundle with great efficiency. The Fibre Bundle Coupler screws onto the output end of the Beam-Condensing Assembly. Once screwed on, the input tip of the fibre bundle would be positioned at the output focal spot of the Beam-Condensing Assembly for optimum light collection. There are two flange sizes of the Fibre Bundle Coupler available to match the 1 and 2 inch diameter sizes of the Beam-Condensing Assembly. Please note that the Fibre Bundle Coupler should not be used on its own without the beam-condensing assembly, as otherwise the light collection efficiency from the light source would be very low.

High Efficiency QTH Fibre Optic Illuminator

Sciencetech's FB-QTH-3 fibre optic illuminator can fully illuminate a fiber bundle with a diameter up to 13 mm (with appropriate adapter) and a maximum numerical aperture of 0.45 (f/1). A QTH lamp with dichroic elliptical reflector and a folding dichroic mirror allow maximum throughput with very efficient elimination of infrared radiation.

Optional optics allow the insertion of 1" interference filters with low beam divergence at the position of the filter. The FB-QTH-3 QTH Illuminator System includes:

- 150 W QTH lamp (Optional 100 or 200W) with integrated dichroic coated ellipsoidal reflector, 2'' dichroic cold mirror in drawer
- heat dump with dissipator for infrared light
- collimating and condensing optics
- filter drawer for interference filters
- fixed adjustable 150W DC power supply; operation at 230 Volt AC, 50 Hz
- housing for the light source

Fibre Bundles Sold Separately

Please see Sciencetech's selection of Fibre Bundles that can be purchased with this QTH Fiber Illuminator. Since the QTH is mainly limited to the visible range, a glass fibre of 8mm or 1/2" diameter is recommended.

Standard 150W QTH Lamp

The QTH Fibre illuminator has a 2-pin GX5.3 lamp socket base which supports Ushio QTH lamps with built-in reflectors. The standard QTH Fibre Illuminator supports 150W Ushio QTH lamps with a built-in MR-16 dichroic reflector. If none is specified, the standard illuminance version defined below is supplied.

- High Illuminance - EJV, JCR21V-150W with 40 hours (1500 Lux)

Highlights

- Illuminates Fibre Bundles up to 13mm diameter
- Visible Light Fibre Illuminator with built-in IR filter
- 150 W QTH lamp (Optional 100 or 200W) with integrated dichroic ellipsoidal reflector
- Dichroic cold mirror and heat dump to elliminate infrared light
- Collimating and condensing optics into fibre bundle
- Filter drawer for interference filters
- Regulated adjustable 150W DC power supply
- Operation at 230VAC@50Hz or 120VAC@60Hz
- Housing for the light source

- Standard Illuminance - EKE, JCR21V-150W with 200 hours (900) Lux

Optional 100W and 200W QTH Lamps

The QTH Fibre Illuminator can also be reconfigured to support different wattage Ushio QTH lamps with built-in reflectors. Although their lamp socket base is the same 2-pin GX5.3, their voltage requirement and working distances are slightly different, meaning modifications to the QTH Fibre Illuminator are required. Please note this issue with Sciencetech when ordering a different wattage lamp.

- 200W Lamp - EJK, JCR24V-200W with 50 hours (1,100 Lux)
- 100W Lamp - EMC, JCR12V-100W with 200 hours

Built-In Power Supply

The QTH Fibre Illuminator has a built in DC power supply to illuminate the lamp. The power level setting is generally fixed, but there are four fixed settings available. The adjustment knob on the low left of front panel has four positions to control the lamp power. In the OFF position, the supply is powered on, but no power is delivered to the lamp. The ALIGN position puts a nominal amount of power to the lamp to facilitate the alignment of coupling optics with a lamp voltage of 10V. At the LAMP SAVE position, the voltage is 14.5 V, which extends the lamp's lifetime more than 100 times longer than the nominal lifetime. The FULL POWER position runs the lamp in the voltage of 17 V, with a lifetime about 10 times longer than the nominal lifetime of the 150W lamp.

Version Description	Version Code	Version Price (USD)
100W	- 100W	
150W	- 150W	
200W	-200W	

ACCESSORIES

Calibrated Light Source
(CalibLight) $ USD

This is a calibration service that documents the particular unit's spectral characteristic of the lamp from 380nm to 1068nm at 4 nm intervals with reference to NIST (U.S.) standard. Realistically, this service should be purchased with an entire light source system including a lamp housing, specific lamp, and power supply to ensure a constant reference condition.

Motorized Filter Wheel, 6 Filter Positions
(FWG-6) $ USD

Sciencetech model FWG-6 motorized filter wheel has six 1” filter positions. Each filter position accepts 1” diameter round or square filters. The belt driven model, which only accepts round filters, can handle filters up to 5mm thick whereas the axial driven model, which accepts both round and square filters, can only handle filters up to 2.5mm thick. The filter wheel is a compact pancake design with an exposed stepper motor mounted on the backside of the housing protruding outwards. This stepper motor can be computer controlled via an optional Sciencetech model MD-100 stepper motor controller module, which connects the motorized filter wheel to the RS-232 serial port (or optional USB port) of a computer. The MD-100 is an external unit that provides power and communications to the motorized filter wheel for filter position selection. The MD-100 also interfaces with a host computer via RS-232 serial commands. A Windows-based Active-X component Sci-filter wheel library allows programmers to incorporate high level filter wheel logic controls into their own software application or could be used as a stand-alone software. This active-X software is available free of charge. Sciencetech’s Sci-Spec and Sci-LDA monochromator and detector software applications (which are sold separately) can also control the motorized filter-wheel via the optional MD-100 controller. Please note individual filters are sold separately.

Usage Odometer
(hourmeter) $ USD

A usage odometer that measures the number of operating hours of a lamp is available as an option on selected Sciencetech arc lamp housing and power supply models. This odometer tracks the lifetime hours a device is activated by measuring the power through the device. The hour odometer does not advance when the device is not powered and hence not used. This hour lifetime meter has a 6 digit display that can track up to 99,999.9 hours. The hour odometer performs a self-check when powered up such as displaying all digits as 8's to ensure that the LCD is functioning properly. The hour meter's LCD only displays when the unit is powered on. To ensure reliability the unit stores the data using nonvolatile memory (EEPROM) when switcher off and can retain data for 25+ years without power. An optional reset button is available which is useful when changing lamps. This option is particularly useful to track the lifetime usage of NIST/NPL calibrated lamps.

Technical Specifications

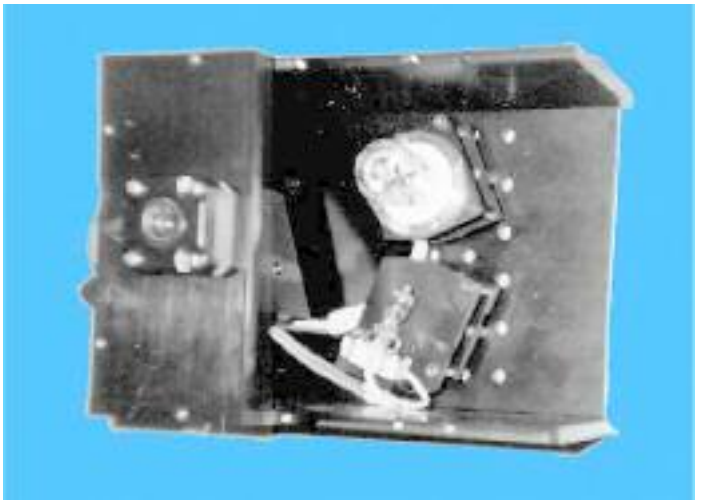
- Illuminate fibre bundle up to 13mm diameter
- Maximum fibre numerical aperture of 0.45 (f/1)

Group Accessories

Please check the appropriate sections in the catalogue for the following**:**

QTH Lamps Selection	(QTHMR16)
Fibre Bundle Selection	(SingleFibreBundle)
One Inch Sort Order Filters	(FiltersSort1)

Deuterium and Dual Deuterium-Tungsten Sources



Sciencetech Dual Deuterium-Tungsten Light Source

Deuterium sources have high ultraviolet output with little visible and infrared emission. They are the preferred source for UV spectroscopy. Sciencetech standard Deuterium sources include Deuterium lamps with a UV glass envelope. These lamps are recommended for the spectral range from 180 to 400 nm. UV glass envelope cuts radiation below 180 nm, minimizing ozone production. If emission below 180 nm is required, lamps with UV grade fused silica envelope are the choice.

Sciencetech offers complete Deuterium sources. The sources include a lamp in the TH3 housing with convection cooling, condensing/collimating fused silica optics, and power supply. The TH3 housing features external adjustments to let the customer optimize the focusing of the source. Standard sources come with a 30 W high brightness, high performance, long life, compact Deuterium lamp. Sciencetech Deuterium sources are powered by the 500-D2-30 power supply. This is a highly stabilized, very low ripple power supply for 30 W Deuterium lamps. For customers that require a much extended spectral range from 180 nm to 2.5 µm, (e.g. for UV/VIS/NIR spectroscopy applications), Sciencetech offers dual Deuterium-Tungsten sources. These sources include: D2 and QTH lamps in dual housing, condensing collimating fused silica optics, flipping mirror (manual or automatic), and DC stabilized power supplies for both lamps. 50 or 100 W QTH can be included in the dual source. The dual source module with automatic source selection includes a stepper motor driven flipping mirror, a controller board, and software. The software allows selection of the wavelength at which switching between sources occurs. The dual source with automatic switching is offered as an independent unit or as an accessory to our automatic direct drive monochromators 9055 or 9056 for a high performance UV/VIS/NIR spectrophotometric system.

Technical Specifications

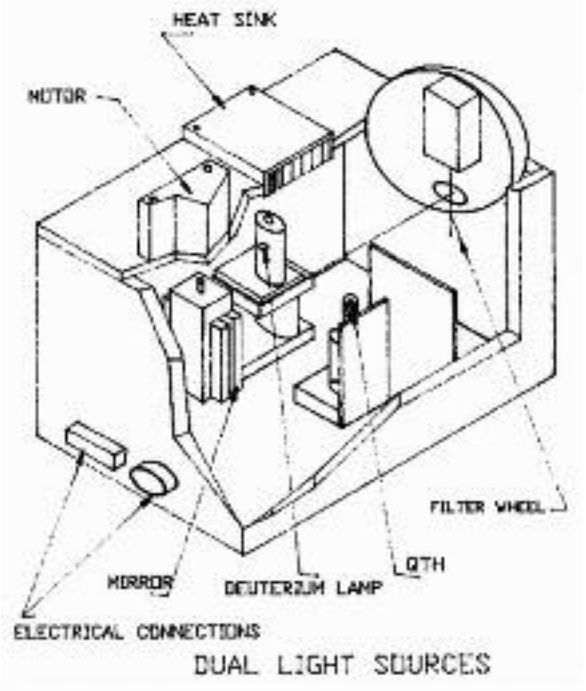
D2 Light Source DHB-30

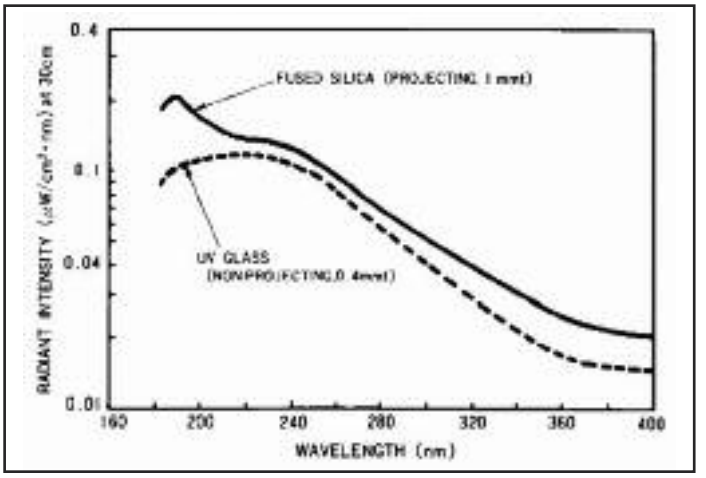
Envelope:	UV Glass, spectral range 185-400 nm
Aperture Size:	1.0 mm diameter
Power:	30 W
Operating Current:	300±30 mA
Discharge Trigger Voltage:	350 V DCminimum,
Lamp Voltage:	80 V DC
Lifetime:	2000 hours
Stability:	0.05% p-p maximum
Drift:	± 0.3%/hour maximum

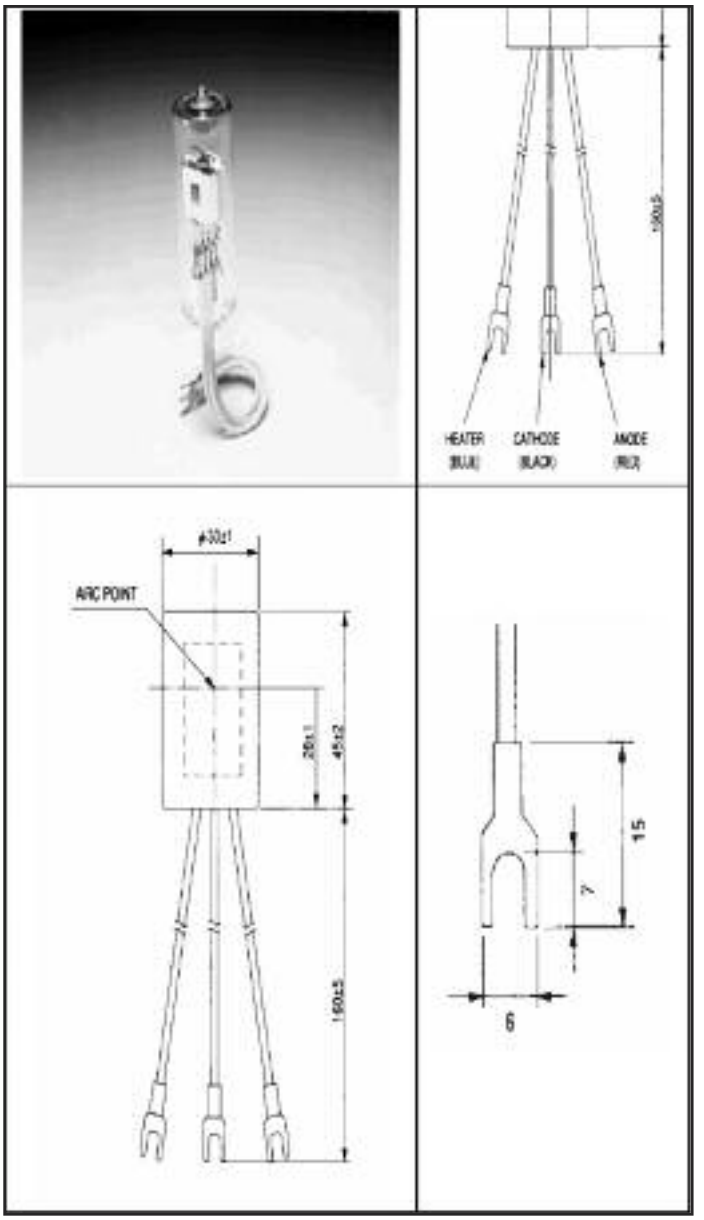
Accessories:

TH3 housing:	Convection Cooling Back Reflector Alignment Adjustments
Optical Coupling Optics:	2 lenses fused silica Condensing/collimating system
500-D2-30 Power Supply:	For 30 W deuterium lamp Highly stabilized
Line Voltage:	(AC)90 to 115/180 to 250 (Automatic)
Cooling:	not required
Output Current:	300 mA DC
Output Voltage:	80 DC(in operation), 160 V DC (with no load)
Output Trigger Voltage:	600 +/- 50 V
Line Regulation:	± 0.05% maximum
Ripple:	0.1% p-p maximum
Drift:	± 0.1%/hour maximum
Output Warm-up Voltage:	12 ±1 V DC (0.5 A)
Warm-up Time:	25 s
Dimensions:	90mm*117mm*200mm
Weight:	1.8kg

Model	Description	Price (USD)
DHB-30	High-brightness deuterium lamp	
TH3	Deuterium lamp housing	
Coupling Optics Con1-2L/FS	2 fused silica lenses condensing/collimating system	
500-D230	Power supply for deuterium lamp	







Technical Specifications

Dual Deuterium-Tungsten Light Source Includes:

- DHB-30 high-brightness deuterium lamp
- QTH long life VIS/NIR light source
- Stabilized power supply for both sources (500-D230 &500-QTH30)
- Reflective/refractive optics for UV to IR transmission Optical coupling optics

Model	Description	Price (USD)
D2-QTH	Dual light source	P.O.R

Infrared Emitter

IRE-12K (1µm -30 µm)

Sciencetech's Models IRE-12 and IRE-12K are coil filament based IR sources with emission of approximately 0.8. It emits in the IR spectral region of 1µm to approximately 30µm. The model IRE-12 operates at 800°C @ 8 watts and the model IRE-12K operates at 975°C @ 11 watts. However, both emitters can be over-powered to a higher temperature with a decrease in service life. They are appropriate for use in lab or field instrumentation due to their long life and stable properties. Please note this is only an IR emitter component and does not include a reflector or housing enclosure.

Mount Design

The radiating element is a coil of resistance wire which has a high emission in the Infrared spectral region. The coil is supported on a grooved cylindrical substrate of alumina, resulting in the windings being electrically insulated from each other. This contributes to a more uniform radiating source.

Operating Environment

The unit does not require operation in a sealed atmosphere. The header is fabricated from cold-rolled steel. The support pins are hermetically sealed in glass.

Collimating Optics

Two reflectors are available. One is a parabolic reflector and the other is a elliptical reflector. We can provide collimating optics using AR coated ZnSe lens, Sapphire lens or Aluminum parabolic reflector.

SPECIFICATIONS

• **IRE-12 Power:**	8 Watts
• **IRE-12K Power:**	11 Watts
• **Operating Temp.:**	800C for IRE-12 and 975C for IRE-12K
• **Volt and Current:**	~6.V @ 1.8A
• **Active Area:**	3.5mm X 3.5mm
• **Lifetime:**	+3 years
• **Recommended Upper Limit:**	1275°C @ ~8V, 2.5A

No Housing, Just Components

Please note that the IR Emitter is not packaged in housing with the reflector. IR Emitter comes in components form. The user needs to package them into housing and provide electrical connection to the power supply. Should the constant voltage power supply or battery powered supply be purchased, the socket harness for the IR Emitter as well as corresponding cables are included.

AC or DC Power

Since the IR emitters are only a coil, they can be operated in either AC or DC mode.

Power Supply Options

Sciencetech has 3 types of power supplies for the IR Emitter. The Constant DC Power and Battery Powered Supplies are dedicated to this IR Emitter and hence come with the appropriate cables and socket harness, while the Variable DC Power Supply is a scientific-grade general purpose light source power supply that can be used for this IR Emitter and other similar light sources.

Options and Accessories

IR Emitter Housing

Sciencetech can enclose the IR Emitter with directional reflector in an air-0cooled housing. This housing would be made of aluminum with a low voltage DC cooling fan placed on top of the reflector as similar to the Model 200-100 arc lamp housing design. This housing would include the reflector (either ellipsoidal or parabolic), socket harness, and connectors to the external power supply, and a sapphire window at the 1" x 1" output port.

Description	Version Code	Price (USD)
800°C @ 8 Watts	-12	
975°C @ 11 Watts	-12K	

Reflectors Only

Two reflector options are available. A parabolic reflector with focal length of 3.0mm and a f/1 elliptical reflector with a focal point 12.4mm outside the front plane of the reflector. Both reflectors are made of machined aluminum and are approximately 1" (25.4mm) diameter. Please note that although the IR Emitter fits inside the reflector, it does not include a housing.

Power Supplies

Sciencetech has 3 types of power supplies for the IR Emitter. The first two are dedicated for this IR Emitter and hence come with the appropriate cables and socket harness, while the last one is a scientific-grade general purpose light source power supply that can be used for this IR Emitter and other similar light sources.

Constant Power Supply

This is a regulated constant power supply for the Model IRE-12 Series infrared emitter. Also included are the cables to the IRE-12 emitter and socket harness. However, a complete housing enclosure is not included.

Battery Power Supply

Sciencetech provides a 6VDC NiMH rechargeable battery pack to power the IR emitter. This battery pack is rated 2500mAh and hence would be able to keep the 9W or 11W IR emitter running for a little over an hour before it requires recharging. The battery pack has its own built-in recharger (120VAC or 240VAC) and an ON/OFF switch. Since a battery pack does not have a transformer inside, the output is a solid 6VDC without any frequency noise. Also included are the cables to the IRE-12 emitter, including a socket harness for the emitter. However, a complete housing enclosure for the IR Emitter is not included.

Variable DC Power Supply

This is a scientific grade variable DC power supply that can be used in either constant voltage mode or constant current mode. Its output voltage is 0~35V and output current is 0~6A. The voltage and current can be set through a set of coarse and fine adjustment knobs (one set for each voltage and current) and the voltage and current values are displayed on two LED displays for simultaneous readouts. It has been tested to work effectively with Sciencetech's glowbar and IR emitter light sources.

System Integration

An integration cost is added to all system purchases for system assembly, optical alignment, testing, and technical support. This cost can be removed if the customer agrees to assemble, calibrate, and install their own system from the individual components purchased. However, telephone or e-mail support related to system assembly, calibration and installation without paying for system integration will be billed separately. Due to the technical knowledge and tools required for system integration, this customer "do-it-yourself" integration approach is NOT RECOMMENDED.