



Germicidal Lamps



**Creating True Value
and
True Partnership**

**World Wide Suppliers
of Quality Germicidal Lamps.**

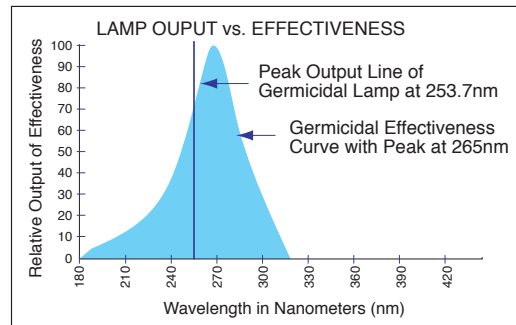


Company Profile:

Founded in 1983, LightSources Inc. has been offering superior products and processes for over 25 years to our O.E.M. customers and is the leading manufacturer of quartz germicidal lamps in the world. In 1993, LightTech Lamp Technology Ltd. was started in Hungary in order to serve the growing demand for germicidal lamps and sleeves for both the European and Asian markets. The combination of our state of the art manufacturing facilities, technology and capability allow us to bring quality products to the market with reduced lead times and high performance. Our companies design and manufacture lamps for a wide variety of special lighting applications spanning multiple market segments within many industries and applications. While our core focus remains on germicidal, photochemical and skin tanning applications, we also manufacture specialty lapa for the LCD backlighting and compact fluorescent applications. Our companies are recognized within their respective markets for excellence in product design and manufacture and in meeting our customers' unique requirements for performance, quality and reliability. As a true global organization, our sales staff is available to serve you in several languages.

UV-Action:

- LightSources & LightTech low-pressure, mercury-arc germicidal lamps are specially designed to produce the highest amounts of UV radiation -Where 90% of energy is typically generated at 253.7nm. This radiation is very close to the peak of the germicidal effectiveness curve of 265nm, the most lethal wavelength to microorganisms. (see graph).
- Our germicidal lamps are used extensively in the air purification markets and have been utilized in applications such as in the food and beverage, medical, HVAC systems (Heating, Ventilating, and Air Conditioning), pharmaceutical and the semiconductor sterilization industries.
- Our germicidal lamps are essential components in the drinking water, wastewater and ground water remediation industries as well.



Ozone-Action:

- "VH" (or Very High ozone producing lamps) generate energy at 185nm in addition to the 253.7nm wavelength.
- The UV emission at 185nm produces abundant amounts of ozone in air. Ozone is an extremely active and effective oxidizer and destroys microorganisms on contact as well as acting as a deodorizer.
- A primary advantage of the ozone generated by our UV germicidal lamps is that it can be carried through the air into places not easily reachable by direct UV exposure.

Advantages of UV-Radiation:

- Environmentally friendly, no dangerous or toxic chemicals that require specialized storage and/or handling and there are no concerns of overdosing. Since no chemicals are added to the air/water there are no process by-products to be concerned with.



- Cost effective - low initial capital cost and reduced operating costs.
- Effective - UV radiation offers immediate treatment process with no requirements for holding tanks or long retention/exposure times.
- Compatibility- UV radiation is highly compatible with other water and air treatment processes while introducing no changes in taste, order, pH, conductivity or chemical properties of the air/water in which it is used.



LightTech LightSources

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Amalgam Lamps:

Special Bases and Sockets:

Terminology:

New
*with Pellet
Design*

**Where
Partnerships
are Valued**



World Wide Suppliers of Quality Germicidal Lamps



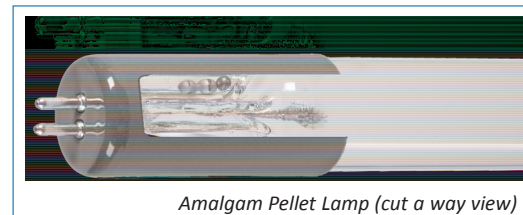
Low Pressure Amalgam Germicidal Lamps

Our companies provide high-quality standard and custom amalgam lamps, both spot amalgam lamps and pellet amalgam lamps. Our low pressure pellet amalgam lamps function with equal efficiency in both horizontal and vertical operations. Amalgam lamps yield up to three times the UVC output over standard lamps of the same length. We have applied our proprietary LongLife+™ process to the amalgam line. Specialty coating eliminates the common problem of accelerated depreciation so

often associated with higher intensity lamps. Our lamps have an operating life of up to 16,000 hours, maintaining an end-of-life UVC output of 85%.

Advantages:

- ✓ Life claim testing done under laboratory conditions. Actual performances depend on operating conditions.
- ✓ Amalgam lamps offer the best performance over a broad air and water temperature range (4 – 40°C) with consistent UVC output; custom designs for higher temperature applications are available. They are available in both ozone generating and ozone-free lamp types.
- ✓ System designers have the ability to further decrease the number of lamps used in their treatment systems.

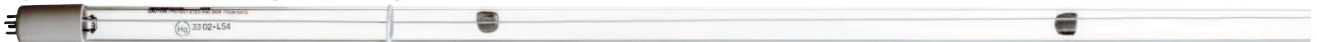


Amalgam Pellet Lamp (cut a way view)

Our Proprietary Patented Pellet Amalgam Technology

Pellet amalgam technology has a major benefit over spot amalgam technology. Pellet amalgam lamps are designed to produce higher UVC at full power, but also provide higher UV output under dimming conditions as compared to spot amalgam technology. This difference allows for increased output with reduced costs. Other benefits of our pellet amalgam technology include greater efficiency in any mounting orientation (horizontal or vertical) and stable operation in more extreme ambient environments.

Spot & Pellet Amalgam Lamp Features

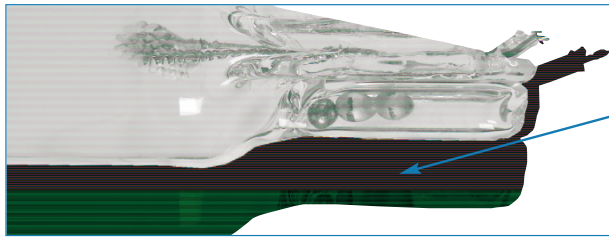


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|---|---|
| <ul style="list-style-type: none"> ✓ Outside diameters: 15mm – 38mm ✓ Power range: 42W – 1,000W ✓ Stable UVC output performance: over a broad air and water temperature range (4 – 40°C) ✓ Operating life: up to 16,000 hrs, maintaining an end-of-life UVC output up to 85% ✓ Higher wattage lamps = fewer lamps required = reduced capital and maintenance cost over system life | <ul style="list-style-type: none"> ✓ Length: up to 2.5meters ✓ Electrical power: up to 1,000W ✓ Nominal UVC efficiency at 254nm: 35% ✓ Power per unit length: up to 5W/cm ✓ UVC intensity per unit length: up to 1,700mW/cm ✓ Ambient application temperature range: 4 - 40°C ✓ Operating hours: up to 16,000hrs ✓ UV Lamp maintenance: up to 85% |
|---|---|

Pellet Amalgam Lamp Features Only:

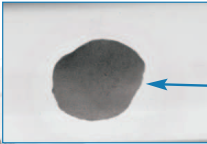
- ✓ Higher UVC outputs down to 50% dimming range as compared to Spot Amalgam technology
- ✓ Universal mounting (horizontal, vertical and diagonal)
- ✓ Stable output performance in very high glass wall temperature application where lamp is mounted vertically or diagonally

Pellet amalgam technology lamps are designed to dimming conditions as This difference allows



Unbased Pellet Amalgam Lamp with view of the pellets

Higher Power Amalgam Lamps Available upon Request!



Spot Amalgam Lamp

Other Lamp Sizes, Shapes & Power Levels Available Upon Request.

UVC Amalgam Germicidal Lamps

Tube Diameter mm	BF - BF mm	Arc Length mm	Power W	Current A	Voltage ¹ V	UV output @ 254nm $\mu\text{W}/\text{cm}^2$ W	Rated Life hrs.
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UVC Amalgam Lamps Horizontal

GPHA357T5L	15	357	278	42	1.2	36	110	11	16000
GPHA843T5L	15	843	764	105	1.2	88	320	35	16000
GPHA1000T5L	15	1000	921	127	1.2	107	370	42	16000
GPHA1554T5L	15	1554	1475	190	1.2	164	500	68	16000
GPHA357T6L	19	357	278	57	1.8	32	130	13	16000
GPHA843T6L	19	843	764	127	1.8	71	400	43	16000
GPHA1000T6L	19	1000	921	150	1.8	84	460	52	16000
GPHA1554T6L	19	1554	1475	240	1.8	134	630	87	16000
GPHHA357T6L	19	357	278	65	2.1	31	140	14	16000
GPHHA843T6L	19	843	764	172	2.1	82	490	54	16000
GPHHA1000T6L	19	1000	921	207	2.1	99	570	65	16000
GPHHA1554T6L	19	1554	1475	320	2.1	154	750	105	16000

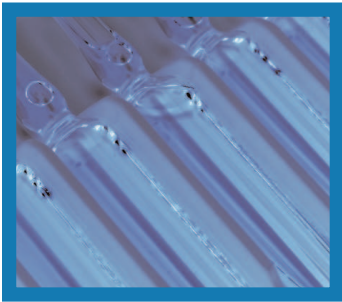
Tube Diameter mm	BF - BF mm	Arc Length mm	Power W	Current A	Voltage ¹ V	UV output at 254nm $\mu\text{W}/\text{cm}^2$ W	Rated Life hrs.
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UVC Amalgam Lamps Universal Application

GPHVA357T5L	15	357	278	42	1.2	36	110	11	16000
GPHVA843T5L	15	843	764	105	1.2	88	320	35	16000
GPHVA1000T5L	15	1000	921	127	1.2	107	370	42	16000
GPHVA1554T5L	15	1554	1475	190	1.2	164	500	68	16000
GPHVA357T6L	19	357	278	57	1.8	32	130	13	16000
GPHVA843T6L	19	843	764	127	1.8	71	400	43	16000
GPHVA1000T6L	19	1000	921	150	1.8	84	460	52	16000
GPHVA1554T6L	19	1554	1475	240	1.8	134	630	87	16000
GPHHVA1554T6L	19	1554	1475	320	2.1	154	750	105	16000
GPHHVA1554T10L	32	1554	1434	471	5	95	1160	157	16000

Note 1: Lamp data is based on measurements performed under laboratory conditions in air at room ambient temperature. Measurements were performed on a high-frequency, current limited electronic ballast and represent average values.
 Note 2: LSI Amalgam lamps are designed for operation on a PREHEAT BALLAST only, unless otherwise noted.
 Note 3: Higher power LSI Amalgam Lamps are available upon request.

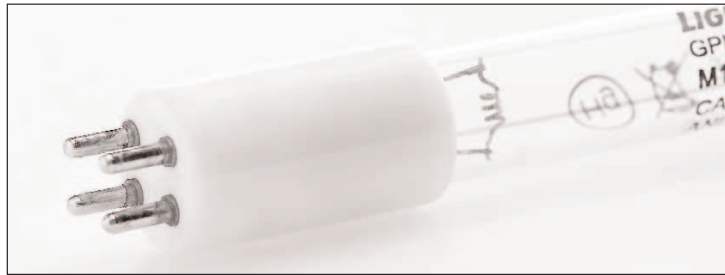
amalgam technology has a major benefit over spot amalgam technology. Pellet amalgam are designed to produce higher UVC at full power, but also provides higher UV output under ing conditions as compared to spot amalgam technology. difference allows for increased output with reduced costs. Other benefits of our pellet



Quartz Germicidal Lamps

The type of fused quartz used to make the lamp envelope or tube (bulb) of the germicidal lamp determines the emission of the wavelength of the UV energy. "L" or LOW- Ozone generating lamps transmit up to 90% of their energy at the 253.7nm wavelength- effective in germicidal applications. "L" lamps typically utilize a doped fused quartz that blocks the emission of 185nm energy. "VH" or VERY-HIGH Ozone generating lamps are produced using clear fused quartz

which allows for the transmission of both 185nm and 253.7 nm energy. The 185nm energy reacts with the oxygen in the air to produce ozone. In applications where moderate amounts of ozone may be required, we can splice the two types of quartz together to form a custom "L" to "VH" ratio according to the customer's specific requirements.



Other Lamp Sizes, Shapes & Power Levels Available Upon Request.

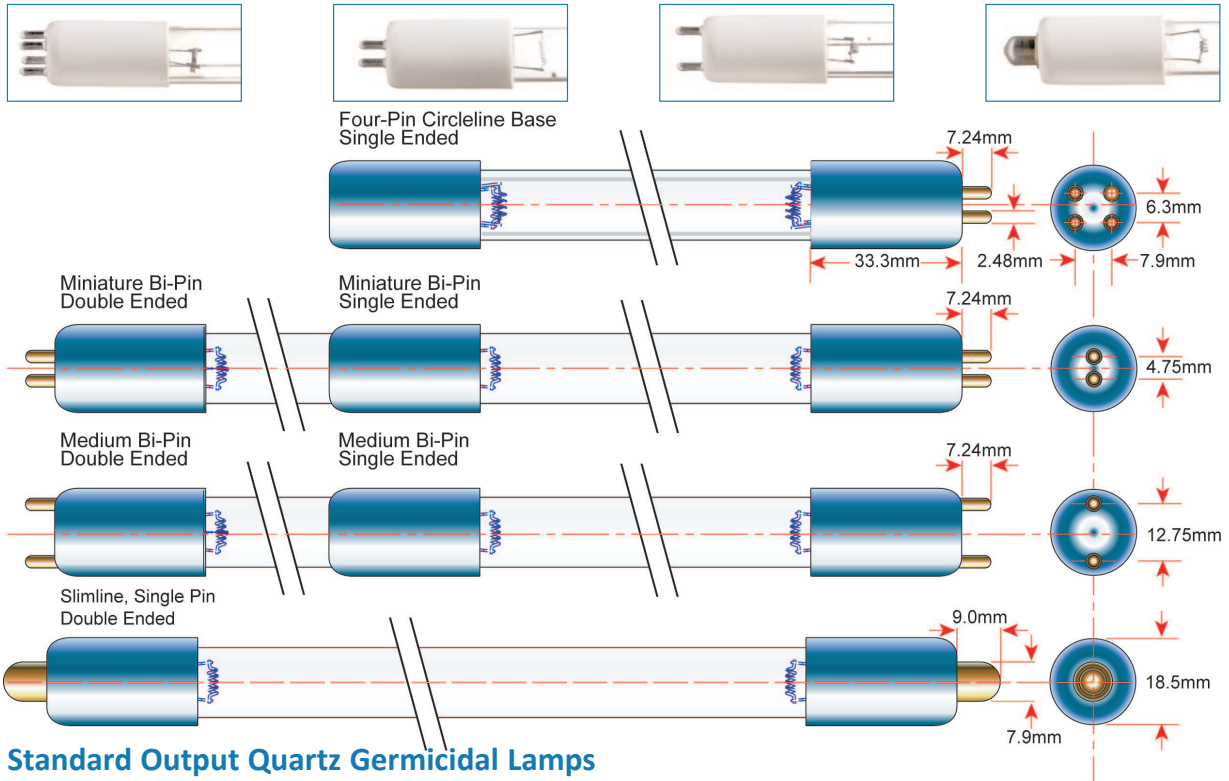
Standard Output Quartz Germicidal Lamps

	Tube Diameter mm	BF - BF mm	Arc Length mm	Power W	Current mA	Voltage ¹ V	UV output @ 254nm μW/cm ²	W	Rated Life hrs.
Preheat Start Lamps - Ozone Free									
GPH212T5L	15	212	132	10	425	25	27	2.7	16,000
GPH287T5L	15	287	207	14	425	34	40	4	16,000
GPH303T5L	15	303	223	15	425	35	43	4.3	16,000
GPH357T5L	15	357	277	17	425	42	57	5.7	16,000
GPH436T5L	15	436	356	21	425	51	72	7.3	16,000
GPH793T5L	15	793	713	38	425	92	125	13.5	16,000
GPH843T5L	15	843	762	41	425	98	150	16	16,000
GPH1148T5L	15	1148	1067	55	425	135	180	22	16,000
GPH1554T5L	15	1554	1474	75	425	179	240	33	16,000
GPH1630T5L	15	1630	1550	79	425	189	252	34.5	16,000

	Tube Diameter mm	BF - BF mm	Arc Length mm	Power W	Current mA	Voltage ¹ V	UV output at 254nm μW/cm ²	W	Rated Life hrs.
Preheat Start Lamps - Ozone Generating									
GPH212T5VH	15	212	132	10	425	25	27	2.7	16,000
GPH287T5VH	15	287	207	14	425	34	40	4	16,000
GPH303T5VH	15	303	223	15	425	35	43	4.3	16,000
GPH357T5VH	15	357	277	17	425	42	57	5.7	16,000
GPH436T5VH	15	436	356	21	425	51	72	7.3	16,000
GPH793T5VH	15	793	713	38	425	92	125	13.5	16,000
GPH843T5VH	15	843	762	41	425	98	150	16	16,000
GPH1148T5VH	15	1148	1067	55	425	135	180	22	16,000
GPH1554T5VH	15	1554	1474	75	425	179	240	33	16,000
GPH1630T5VH	15	1630	1550	79	425	189	252	34.5	16,000

Note 1: Operation on high frequency power supply

Typical Germicidal Lamp Configurations

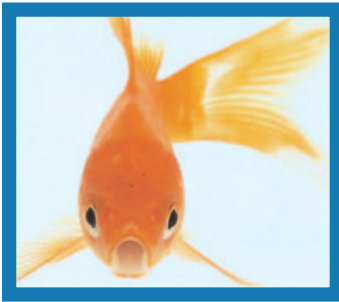


Standard Output Quartz Germicidal Lamps

Tube	Tube		Arc Length	Power	Current	Voltage ¹	UV output		Rated Life
	Diameter	BF - BF					@ 254nm	W	
	mm	mm	mm	W	mA	V	μW/cm ²		
Instant Start Lamp - Ozone Free									
G10T5L	15	357	277	17	425	42	57	5.7	16,000
GSL692T5L	15	692	612	32	425	77	95	11	16,000
G36T5L	15	843	762	41	425	98	150	16	16,000
G48T5L	15	1148	1067	55	425	135	180	22	16,000
G64T5L	15	1554	1474	75	425	179	240	33	16,000
G67T5L	15	1630	1550	79	425	189	252	34.5	16,000

Tube	Tube		Arc Length	Power	Current	Voltage ¹	UV output		Rate Life
	Diameter	BF - BF					at 254nm	W	
	mm	mm	mm	W	mA	V	μW/cm ²		
Instant Start Lamp - Ozone Generating									
G10T5VH	15	357	277	17	425	42	57	5.7	16,000
GSL692T5VH	15	692	612	32	425	77	95	11	16,000
G36T5VH	15	843	762	41	425	98	150	16	16,000
G48T5VH	15	1148	1067	55	425	135	180	22	16,000
G64T5VH	15	1554	1474	75	425	179	240	33	16,000
G67T5VH	15	1630	1550	79	425	189	252	34.5	16,000

Note 1: Operation on high frequency power supply



High Output (HO) Quartz Lamps

High Output (HO) lamps yield up to 2/3 more UV output when compared to standard lamps of the same length. HO lamps offer system designers unique opportunities to decrease the number of lamps required without compromising functionality of the system. This has the added potential benefits of reduced system footprint, increased efficiency and/or increased system capacity. HO lamps are produced and are available in the same configurations of standard

lamps. Custom lengths and configurations may also be produced to the customer's specific requirements. The table below represents a sampling of the more common lamp sizes. We can custom design the ideal HO lamp for your unique application.



High Output (HO) Quartz Germicidal Lamps

	Tube Diameter mm	BF - BF mm	Arc Length mm	Power W	Current mA	Voltage ¹ V	UV output @ 254nm μW/cm ² W		Rated Life hrs.
Ozone Free									
GPH436T5L/HO	15	436	360	48	800	60	120	13	16,000
GHO36T5L	15	842	755	87	800	110	260	28	16,000
GPH846T5L/HO	15	846	767	90	800	113	265	29	16,000
GPH893T5L/HO	15	893	815	95	800	120	270	30	16,000
GHO64T5L	15	1554	1421	155	800	195	395	54	16,000
GPH1149T12L/HO	38	1149	985	90	1250	75	325	35	16,000

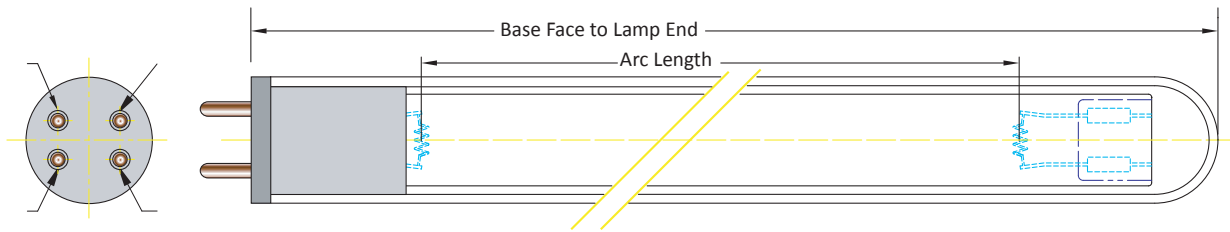
	Tube Diameter mm	BF - BF mm	Arc Length mm	Power W	Current mA	Voltage ¹ V	UV output at 254nm μW/cm ² W		Rate Life hrs.
Ozone Generating									
GPH436T5VH/HO	15	436	360	48	800	60	120	13	16,000
GHO36T5VH	15	842	755	87	800	110	260	28	16,000
GPH846T5VH/HO	15	846	767	90	800	113	265	29	16,000
GPH893T5VH/HO	15	893	815	95	800	120	270	30	16,000
GHO64T5VH	15	1554	1421	155	800	195	395	54	16,000
GPH1149T12VH/HO	38	1149	985	90	1250	75	325	35	16,000

Note 1: Lamp data is based on measurements performed under laboratory conditions in air at room ambient and represent average values; operation on high frequency power supply.



Germipak UV Cell Germicidal Lamps

LightSources and LightTech offer a series of integrated assemblies consisting of germicidal lamps installed directly into a quartz sleeve. This cellular concept offers a wide range of custom designed possibilities for OEM applications. Germipak UV Cell lamps are very economical components of Point of Use Water Systems and other applications. The standard units listed below have 15mm (T5) diameter lamps and 20mm diameter sleeves.



Germipak Quartz Germicidal Cell Lamps

	Tube Dia mm	Sleeve Dia mm	BF - Lamp Ends mm	Arc Lgth mm	Power W	Current mA	Voltage ¹ V	UV output @ 254nm μW/cm ²	W	Rated Life hrs.
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Ozone Free

GCL436T5L/Cell	15	20.5	436	356	21	425	51	65	6.5	16,000
GCL793T5L/Cell	15	20.5	793	713	38	425	92	111	12.1	16,000
GCL36T5L/Cell	15	20.5	842	762	41	425	98	130	14	16,000

Ozone Generating

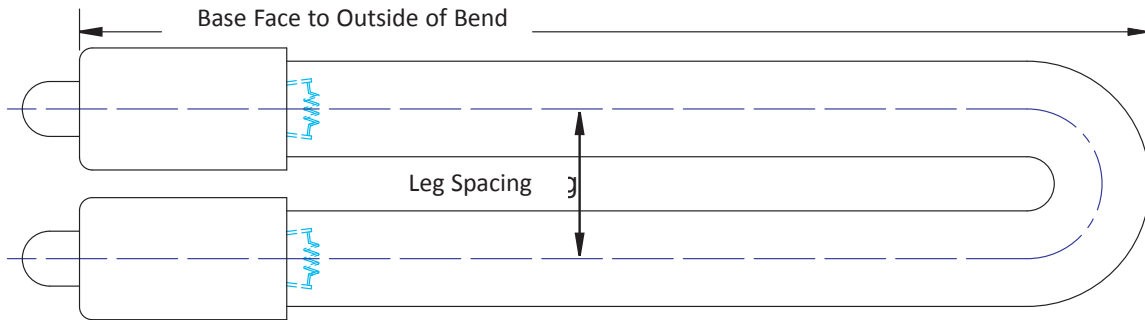
GCL436T5VH/Cell	15	20.5	436	356	21	425	51	65	6.5	16,000
GCL793T5VH/Cell	15	20.5	793	713	38	425	92	111	12.1	16,000
GCL36T5VH/Cell	15	20.5	842	762	41	425	98	130	14	16,000

Note 1: Lamp data is based on measurements performed under laboratory conditions in air at room ambient and represent average values; operation on high frequency power supply.



Quartz U-Shaped Germicidal Lamps

Our quartz U-shaped germicidal and ozone lamps can produce more intense ultraviolet radiation in a limited space, allowing designers more flexibility. These lamps are available with center-to-center leg spacing of 22mm or 76mm, and offer the perfect solution by effectively doubling the arc length and UVC output.



Various lengths and base configurations available



Quartz Germicidal U-Lamps

	Tube Diameter mm	BF - OB / LS mm	Arc Length mm	Power W	Current mA	Voltage ¹ V	UV output @ 254nm		Rated Life hrs.
							μW/cm ²	W	
Ozone Free									
GU76-10T5L	15	169/76	277	17	425	42	57	5.7	16,000
GU22-10T5L	15	186/22	277	17	425	42	57	5.7	16,000
GU22-390T5L	15	390/22	699	36	425	85	105	12	16,000
GU76-390T5L	15	390/76	711	37	425	88	110	12.8	16,000
GU76-36T5L	15	412/76	762	41	425	98	135	14.3	16,000
GU22-36T5L	15	429/22	762	41	425	98	135	14.3	16,000
Ozone Generating									
GU76-10T5VH	15	169/76	277	17	425	42	57	5.7	16,000
GU22-10T5VH	15	186/22	277	17	425	42	57	5.7	16,000
GU22-390T5VH	15	390/22	699	36	425	85	105	12	16,000
GU76-390T5VH	15	390/76	711	37	425	88	110	12.8	16,000
GU76-36T5VH	15	412/76	762	41	425	98	135	14.3	16,000
GU22-36T5VH	15	429/22	762	41	425	98	135	14.3	16,000

Note 1: Lamp data is based on measurements performed under laboratory conditions in air at room ambient and represent average values; operation on high frequency power supply.



Soft Glass Germicidal Lamps

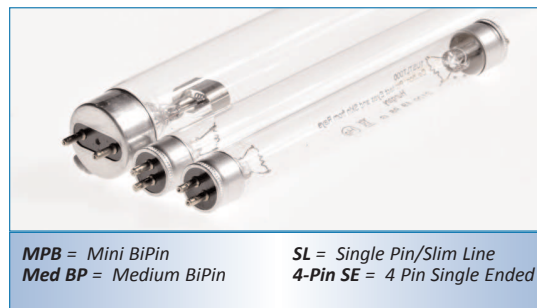
Soft glass lamps are specialty 254nm UVC emitting germicidal lamps. They operate on a variety of current (180 to 1,700mA inputs) and offer maximum efficiency in producing short wave UVC radiation at 254nm.

We offer custom configurations to meet OEM requirements. Standard soft glass lamps are available in T4, T5, T6, T8 and T12 bodies. At our glass factory in Hungary, we engineer our germicidal glass to the highest standards and from the best

materials. We design our soft glass specifically for low pressure mercury vapor lamps that serve the water and air purification industries. Our newly developed manufacturing process provides higher UVC output over the life of the lamp.

Advantages:

- ✓ Maximum efficiency in producing short wave UVC radiation at 254nm
- ✓ Newly developed manufacturing process provides higher UVC Output over lamp life
- ✓ Custom configurations available to meet OEM requirements



MPB = Mini BiPin SL = Single Pin/Slim Line
 Med BP = Medium BiPin 4-Pin SE = 4 Pin Single Ended

Soft Glass UV Emitting Germicidal U-Lamps

	Tube Dia mm	Base Config.	BF - BF BF-EOL mm	Arc Lgth mm	Power W	Current mA	Voltage@ Hi Freq ¹ V	UV output @ 254nm μW/cm ² W	Rated Life hrs.	
Standard Lamps - Ozone Generating										
LTC4T5	15.7	MBP	134.7	77	4	180	23	9	0.9	9,000
LTC6T5	15.7	MBP	210.9	154	6	180	34	16	1.6	9000
LTC8T5	15.7	MBP	287.1	231	8	180	45	21	2.1	9000
LTC11T5	15.7	MBP	210.9	154	11	280	40	22	2.2	9000
LTC11T5SE	15.7	4-Pin SE	241.1	170	12	280	43	24	2.4	9000
LTC16T5	15.7	MBP	287.1	231	16	370	44	40	4	9000
LTC16T5SE	15.7	4-Pin SE	317.3	245	17	370	46	42	4.2	9000
LTC40T52	15.7	SL	842	767	41	425	98	141	15.6	9000
LTC64T52	15.7	SL	1554	1481	76	425	180	225	31	9000
LTC40T5SE2	15.7	4-Pin SE	842	767	41	425	98	141	15.6	9000
LTC64T5SE2	15.7	4-Pin SE	1554	1481	76	425	180	225	31	9000
LTC10T8	25.7	Med Bipin	330.3	247	10	280	36	23	2.3	9000
LTC15T8	25.7	Med Bipin	436.2	353	15	350	44	47	4.8	9000
LTC30T8	25.7	Med Bipin	893.4	810	30	380	80	100	11.3	9000

High Output Lamps - Ozone Generating										
LTC80T5SE2	15.7	4-Pin SE	842	767	83	800	103	245	27	9000
LTC125T5SE2	15.7	4-Pin SE	1554	1481	155	800	195	360	50	9000
LTC25T8	25.7	Med Bipin	436.2	353	25	620	41	71	7.2	9000
LTC55T8	25.7	Med Bipin	893.4	810	55	800	70	170	19	9000
LTC75T8	25.7	Med Bipin	1198.2	1115	75	900	85	215	26.5	9000
LTC115T12	37.7	Med Bipin	1198.2	1118	115	1700	69	280	34	9000

Note 1: Lamp data is based on measurements performed under laboratory conditions in air at room ambient and represent average values.

Note 2: High frequency ballast application can extend lifetime up to 13,000 hours.



UVC Compact Germicidal Lamps

Our companies offer a superb line of UVC emitting compact germicidal lamps for applications in small spaces. These lamps are consistently a favorite product among our clients. Compact lamps are available in a specially engineered two-tube linear innovative design, which allows a very uniform output. We provide all standard lamp sizes as well as custom configurations.

The high efficiency of a compact lamp is created by leaving a small dead space at the end of each of the two parallel tubes. Because this area is not part of the path followed by the discharge, thereby it is further away from the center of the discharge column; the wall temperature is far lower than anywhere else. These compact designs are available in soft glass (254nm only) and quartz glass for both 254nm and 185nm technology applications with pellet amalgam technology. Providing outstanding ultraviolet UVC efficiency, it is one of the best value solutions available in today's market.



2G7

G23

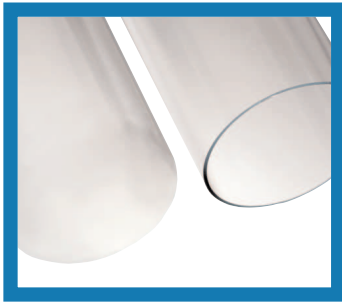
2G11



UVC Compact Germicidal Lamps

	Tube Dia mm	Base Config.	BF - OL (Max) mm	Power W	Current mA	Voltage@ High Freq ¹ V	UV output @ 254nm μW/cm ² w	Rated Life hrs.	
Soft Glass Low Pressure									
LTC5W/G23	12.5	G23	83	5	180	34	9 1	8000	
LTC7W/G23	12.5	G23	115	7	175	47	16 1.8	8000	
LTC9W/G23/2G7	12.5	G23 / 2G7	145	9	170	60	22 2.4	8000	
LTC11W/G23	12.5	G23	214	11	160	89	33 3.6	8000	
LTC13W/G23	12.5	GX23	155.2	13	290	59	31 3.4	8000	
Soft Glass High Power									
LTC18W2G11	17.5	2G11	225	18	370	60	51 5.5	8000	
LTC24W/2G11	17.5	2G11	320	24	350	87	65 7	8000	
LTC35WHO/2G11	17.5	2G11	225	35	850	40	105 11	8000	
LTC36W/2G11	17.5	2G11	415	36	440	105	110 12	8000	
LTC55W/2G11	17.5	2G11	535	55	540	103	156 17	8000	
LTC60WHO/2G11	17.5	2G11	415	60	670	120	169 18	8000	
LTC95W/2G11	17.5	2G11	535	95	950	100	304 32	8000	
Quartz Glass High Power									
LTCQ35WHO/2G11	15	2G11	225	36	800	45	110 11	9000	
LTCQ36W/2G11	15	2G11	415	36	440	105	119 13	9000	
LTCQ55W/2G11	15	2G11	535	55	540	103	168 18	9000	
LTCQ60W/2G11	15	2G11	415	60	670	118	179 19	9000	
LTCQ95W/2G11	15	2G11	535	95	950	100	328 34	9000	

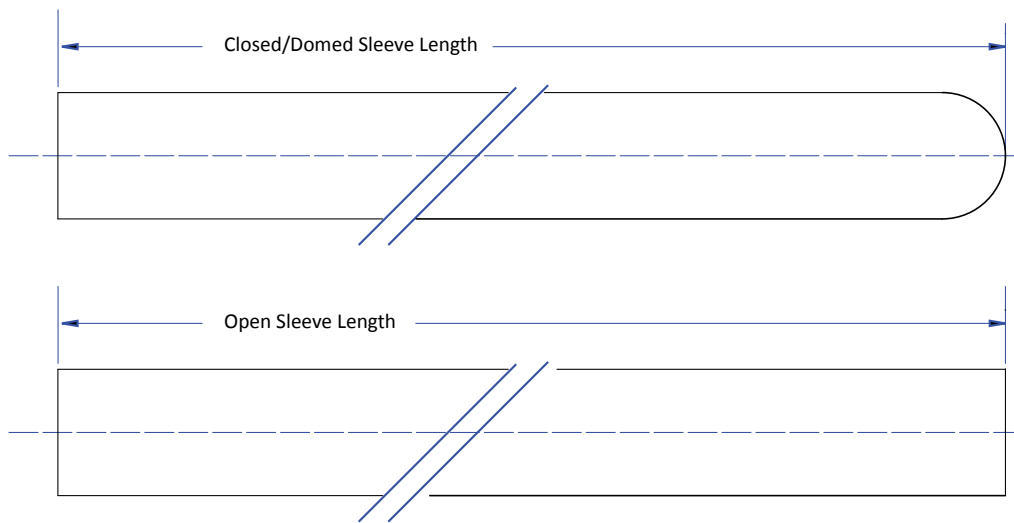
¹Custom quartz high wattage (> 150W) pellet amalgam compact lamps available.



Quartz Sleeves for Germicidal Lamps

Quartz sleeves are a good investment, offering protection against air and water flow, breakage, leakage, temperature fluctuations, and environmental hazards. LightSources companies engineer a variety of standard and custom quartz sleeves and jackets that can be applied to a range of germicidal UVC lamp types, including standard, high output (HO), and amalgam. We offer OEMs numerous options, such as open or closed ends (domed), fire polished or saw cut ends, and other custom shapes.

Our quartz sleeves are available in a wide array of diameters and lengths for use in air purification units, water disinfection units, photochemical reactors, and other specialized equipment.



Quartz Sleeves/Jackets - Most Commonly Used

I.D. mm	O.D. mm	Wall Thickness mm	Suggested Applications
17.0	19.0	1.00	15mm O.D. Standard and High Output bare lamps without capping
18.0	20.5	1.25	
19.6	22.0	1.20	
20.0	22.0	1.00	15mm O.D. Standard and High Output lamps
20.0	22.5	1.25	15mm O.D. Standard and High Output lamps
20.0	23.0	1.50	15mm O.D. Standard and High Output lamps
22.0	24.5	1.25	15mm O.D. Standard, High Output and Amalgam lamps
22.0	25.0	1.50	15mm O.D. Standard and High Output lamps
25.0	28.0	1.50	19mm O.D. Standard, High Output and Amalgam lamps
26.0	30.0	2.00	19mm O.D. Standard and High Output lamps
26.4	30.0	1.80	19mm O.D. Standard and High Output lamps
30.0	33.0	1.50	19mm O.D. Standard and High Output lamps
32.0	36.0	2.00	25mm O.D. Standard, High Output and Amalgam lamps
34.0	38.0	2.00	
35.0	38.0	1.50	
42.0	45.0	1.50	32mm O.D. Standard, High Output and Amalgam lamps
44.0	48.0	2.00	32mm O.D. Standard, High Output and Amalgam lamps
45.0	48.0	1.50	32mm O.D. Standard and High Output lamps



Proprietary & Patented Special Bases and Sockets

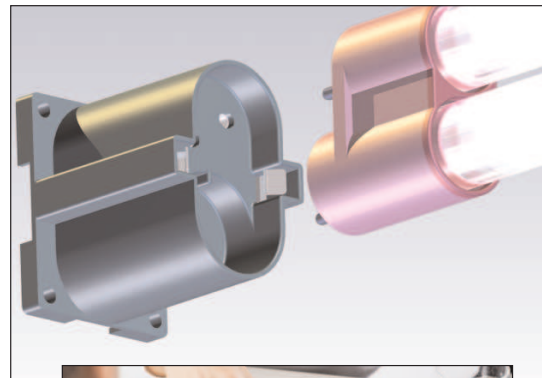
The LightSources group provides its clients in the germicidal market with standard and highly customized lamps. We distinguish ourselves not only by our ability to produce customized lamps, but also by offering proprietary and patented base solutions that keep your systems competitive in global markets.

As a specialty manufacturer of custom ceramic components Cerlux has the manufacturing expertise to design and fabricate proprietary end fittings and matching sockets. The variety of custom ceramic parts, are produced in either an automated process or manual hand-press, with great attention to detail. All end fittings and sockets are individually tested at our factory before we assemble them to your lamps.

Our customized, proprietary lamps provide unique solutions to our OEM clients in the germicidal, specialty and tanning lamp industries. Our custom designed lamp caps with matching sockets are just one of the many reasons why our customers come back to us so we can help them with their special needs.

What's Your Competitive Advantage?

- ✓ Grow your revenue by maintaining replacement sales within the OEM market
- ✓ Source customized lamps that will only fit into YOUR unique systems
- ✓ Benefit from greater flexibility in your system designs



What's Your Visual Business Identity?

- ✓ Distinguish your lighting products with identifiable and unique bases, sockets, end caps or pin configurations
- ✓ Bases or sockets in colors that conform to your corporate identity standards
- ✓ Choose any colors that will set your systems apart from competitors. *(all standard pantone colors available; premium colors available upon request)*



- ✓ Distinguish your bases or sockets with your logo* decal or any other company details. *(applies to germicidal lamps only; tanning and specialty lamps are marked by etches on the glass)*





Terminology

UV lamp power is characterized in terms of nominal total input wattage as well as nominal total UV output wattage. The nominal UV output power presents a sum of the SPD (spectral power distribution). It tends to differ between LP (low pressure) and HID (high intensity discharge) lamps. The ratio of input power to output power defines the actual efficiency of the lamp. Most LP lamps have efficiencies of 30 – 35%. Efficiencies of HID lamps are much lower (7-11%).

Most of the available UV lamps are identified by model numbers. These included coded information about the lamp. Usually, you can find lamp abbreviations on our lamp data sheets and they are comprised of six parts:

1. **Nominal Lamp Length**
2. **Nominal Lamp Wattage**
3. **Lamp diameter**
4. **Lamp Shape**
5. **Lamp base (base code)**
6. **Circuit or special description**

G	AA(AA)	BB(BB)	C	D(D)	E(E)	/ F(F)	G(G)
Denotes "Germicidal" Lamp	Two to Four Character "Operation" Indicator	Two Digits: Lamp Length in inches Four Digits: Lamp length in mm	Tubular Design "T"	Tube Diameter (O.D.)	Glass Type: L = Low Ozone Producing VH = Very High Ozone Producing	Spacer / Base Type	Connection Type
	PH = Preheat		T5 =	5/8" (15mm)		4P = 4 Pin	SE = Single Ended
	HO = High Output		T6 =	6/8" (19mm)		SL = Slimline	DE = Double Ended
	CL = Cell Lamp		T8 =	8/8" (25mm)		MNBP = Mini Bi-Pin	
	U = U Lamp		T10 =	10/8" (32mm)		MDBP = Med Bi-Pin	
	PHA = Preheat Amalgam		T12 =	12/8" (38mm)			
	PHHA = Preheat Amalgam Horizontal High Output						
	PHVA = Preheat Amalgam Horizontal or Vertical						

Two to Four Character "Operation" Indicator:

- G = Germicidal
- PH = Pre- Heating
- HO = High Output
- CL = Cell Lamp
- U = U Lamp
- PHA = Preheat Amalgam
- PHHA = Preheat Amalgam Horizontal High Output
- PHVA = Preheat Amalgam Horizontal or Vertical

Length:

- 2 digits: inches (total length in installation, for sleeve length)
- 3 digits: mm (base-to-base length)

Tubular Design and Diameter:

- T = Tubular (1/8 inch)
- T5 = 5/8 inch (15mm)
- T6 = 6/8 inch (19mm)
- T8 = 8/8 inch (25mm)
- T10 = 10/8 inch (32mm)
- T12 = 12/8 inch (38mm)

Glass Type:

- L = low ozone
- VH = very high ozone
- H = spliced lamps combining "L" and "VH" glass
- / = spacer

Base Type:

- 4P = 4- pin circline base, single ended
- MDBP = Medium Bi- pin (G13; 12.7mm)
- MNBP = Mini Bi- pin (G5; 5mm)
- SL = Slimline = SP = Single Pin

Connection Type:

- SE = Single Ended
- DE = Double Ended



USA/North America

LightSources, Inc.

37 Robinson Blvd.
Orange, CT 06477
USA
phone: +1 203-799-7877
phone: +1 800-826-9465
fax: +1 203-795-5267
email: info@light-sources.com

Europe

LightTech Lamp Technology, Ltd.

Hegyrejaro ut 1.
2120 Dunakeszi
Hungary
phone: +36 27 541-800
fax: +36 27 390-099
email: info@lighttech.hu

Asia

LightSources (China) Co., Ltd.

Room 1001-A, 2nd Bld No 388
Zhongjiang Rd, Putuo District,
Shanghai 200333
China
phone: +86 21 526 62 921
fax: +86 21 52662 921
email: saleschina@light-sources.com

In 1990 the EPA developed the TCPL test (Toxicity Characteristic leaching Procedure) to simulate the effect of disposing waste in conventional landfills under complex environmental conditions. The method is designed to determine the mobility of toxic material in liquid, solid and multiphasic waste.

The EPA developed the Toxic Characteristic leaching Procedure to determine the toxicity of waste. The TCLP test does NOT measure the total mercury content but rather the potential of mercury to leach in to groundwater if a waste is disposed of in a land fill. TCLP is designed to simulate the leaching a waste will undergo if disposed in a sanitary landfill. This test includes mercury, lead, cadmium, and other hazardous materials. Passing this test for mercury, for instance, requires a yield of less than 0.2 milligrams per liter upon completion of the test. Lamps that PASS the TCLP are considered as non-hazardous waste by the EPA. We are proud to be among the first to offer the majority of our germicidal lamps as TCLP compliant.

While lamps that pass TCLP may be classified as Non-hazardous waste by the EPA, LightSources and LightTech strongly encourage the recycling of spent germicidal lamps. Please contact your local environmental agency for assistance with lamp recycling or visit www.lamprecycle.org.

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