

## Product Data Sheet - Rev. 2.0

# EL Wire: LyTec™ SVL-01S

## General Purpose Product Group

### Product Features:

LyTec™ SVL-01S General Purpose Product line is designed primarily for various indoor and outdoor applications. Outdoor use is limited for certain colors primarily due to discoloration under sunlight. (See table on the next page.)

Certification Status:

\* **UL - Electrical sign accessory/component**

LyTec™ SVL-01S series product line includes the following colors:

**Blue-Green      Ultra-Marine      Pink**  
**White              Green                      Red**

Lighting Color	Non Lighting Color (Idle)	Typical Initial brightness level at 100VAC/ 60/400/2000Hz (cd/m <sup>2</sup> )	Useful Lifetime 100VAC/ 60/400/2000 Hz (X1000 Hrs)
Blue Green	Clear	8 / 41 / 116	25 / 5.7 / 1.6
White	Clear	4 / 15 / 40	20 / 4.5 / 1.2
Ultra Marine	Dark Blue	3 / 16 / 48	25 / 5.7 / 1.6
Green	Green	6 / 19 / 72	20 / 5.7 / 1.6
Pink	Pink	2 / 9 / 38	20 / 5.7 / 1.6
Red	Red	2 / 10 / 39	20 / 5.7 / 1.6

- Typical LyTec™ Wire diameter - 2.3 mm.
- Useful lifetime based upon operation cycles: 6 hours ON, 18 hours OFF - reaching 30% of the initial brightness.
- Blue Green wire color shifts from Green at lower frequencies to Blue at higher frequencies.

### Product Applications:

- Indoor illuminated signs including portable Point of Purchase signs
- General Purpose decorations (Christmas, parties, special events)
- Safety Lighting



Christmas Decoration



Indoor decoration



Signs

### \*NOTES:

- For application design please refer to detailed technical specifications
- For further assistance please consult our support engineering

*The information provided in this document is for reference only and is subject to change without further notice*

# LyTec™ SVL-01S

## General Purpose Product Group

### Physical Properties:

Diameter: 2.5 mm/ .1" - Max  
 Bending Diameter: 12.mm/ 0.5" - Max  
 Stretching Force: 1 Kg - Max  
 Twisting Angle: 30°/meter - Max

### Packaging

- LyTec™ Wire is shipped on DIN 250 spools in standard quantities of 250m (820 ft) per spool.

### Electrical Operation

Absolute Max. Ratings:

Input Voltage: 130VAC (rms)  
 Average AC current: 100 mAmp  
 Insulation Breakdown Voltage: 4,000 Volts per IEC 335-1

**Flammability:** Horizontal Flame Test per UL 62, Para. 64

**Operating Temperature:** -20°C to + 55°C (-4°F to +131° F)

**Storage Temperature:** -40°C to + 65°C (-40°F to +149° F)

**Color Stability Data** - Time frame during which initial wire illumination chromaticity coordinates remain within the original color region related to the Locus chromaticity diagram after exposure to an average sunlight dose in idle condition.

Color	Mid Europe - Approximate time to discoloration after average sunlight exposure dose (months )	Tropical Area - Approximate time to discoloration after average sunlight exposure dose (months)
Blue Green	24	12
Ultra Marine	24	12
White	18	9
Green	18	9
Pink	8	4
Red	6	3

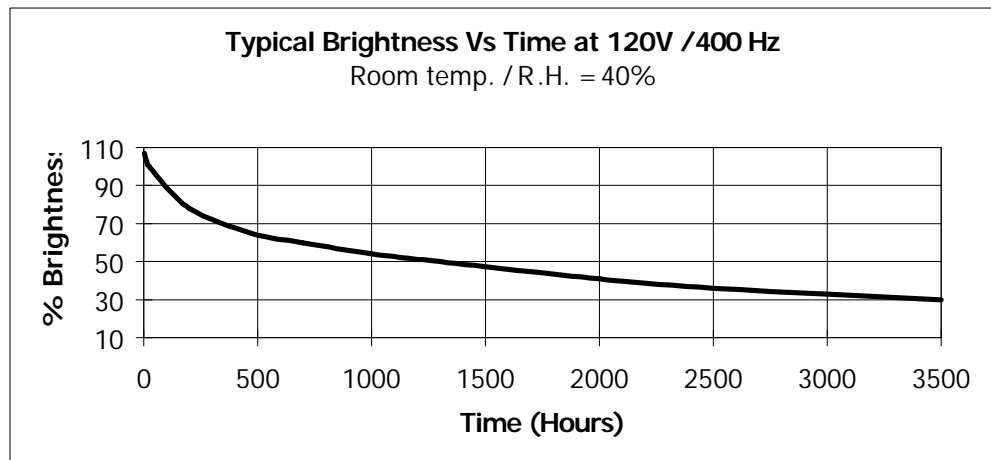
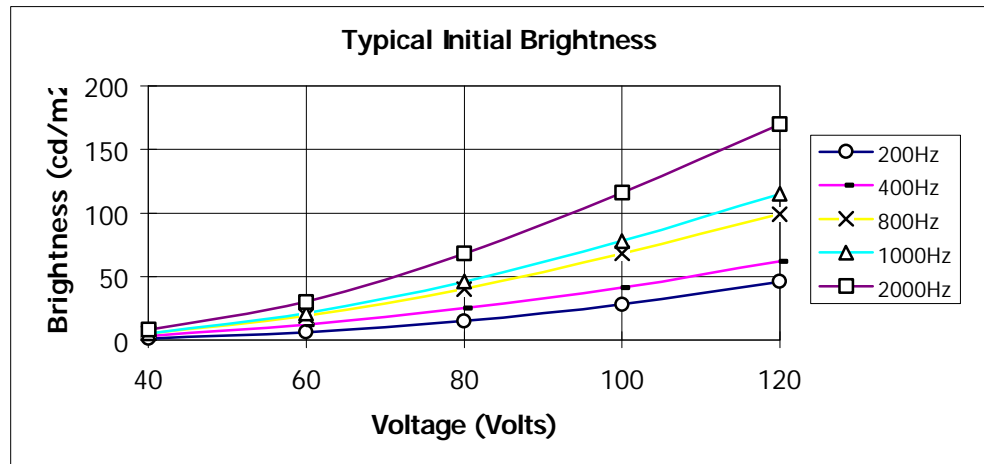
**Typical Current Consumption (mAmp/1meter of LyTec™ Wire)**

Voltage [Vrms]	60 Hz	200 Hz	400 Hz	800 Hz	2000 Hz
80	0.13	0.62	1.12	2.22	5.94
100	0.19	0.88	1.47	2.92	7.84
120	0.27	1.29	1.90	3.68	9.76



**Typical Initial Brightness (cd/m<sup>2</sup>)**

<b>Voltage (VRMS)</b>	<b>200H z</b>	<b>400H z</b>	<b>800H z</b>	<b>1000 Hz</b>	<b>2000H z</b>
<b>40</b>	1	3	5	5	8
<b>60</b>	6	12	19	21	30
<b>80</b>	15	25	40	46	68
<b>100</b>	28	41	68	78	116
<b>120</b>	46	62	99	115	170



\* Remark: Product operation under direct sunlight is not recommended!

\*\* Remark: Actual parameters of each lot may vary from typical values within +/-20%.

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 Distributors of Lytec EL-Fiber  
 tel: 407.654.2660; email: avalon.serv@worldnet.att.net

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## ***White Electroluminescent Fiber***

### ***for Indoors and Outdoors\* Use***

### **Product Specifications ( Model 01S W1)**

Overall Diameter                      2.1 - 2.6 mm ( 0.083" - 0.123" )

#### **Absolute Maximum Ratings**

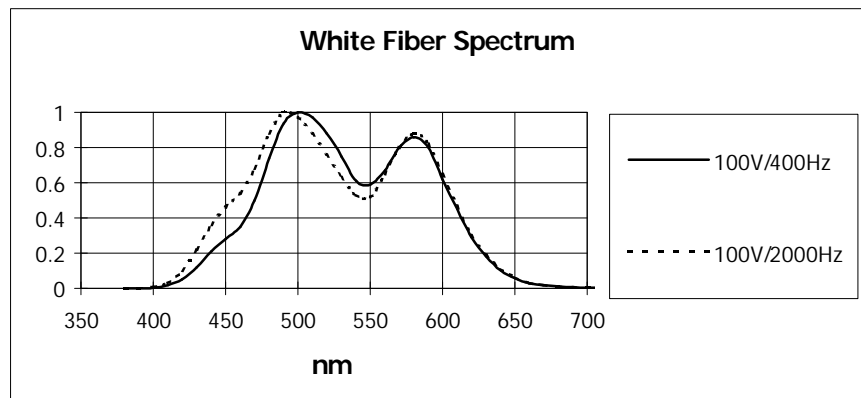
Power Supply Voltage	130 Volts (RMS)
Storage Temperature	-20 to +65 deg. C (-4 to +149 deg.F)
Operating Temperature	-20 to +55 deg. C (-4 to +131 deg.F)
Stretching Force	1 Kg
Bending Diameter	at least 5 times the fiber diameter
Twisting Angle	30 degrees per meter
Average AC current	100 mAmp
Insulation Breakdown Voltage	4000 Volts per IEC 335-1
Flammability	850 deg C per IES 335 -1

#### **Electro-Optical Characteristics**

Brightness at 100 Volts / 400Hz	15 cd/m <sup>2</sup>
Chromaticity Coordinates at 100V/400 Hz	X = 0.322, Y = 0.437
Brightness at 100 Volts / 800Hz	22 cd/m <sup>2</sup>
Chromaticity Coordinates at 100 Volts / 800Hz	X = 0.319, Y = 0.419
Brightness at 100 Volts / 2000Hz	40 cd/m <sup>2</sup>
Chromaticity Coordinates at 100 Volts / 2000Hz	X = 0.315, Y = 0.387
Dynamic Capacitance at 5 VAC in darkness	5.3 nF +/- 0.8 nF

#### **Typical\*\* Initial Performance**

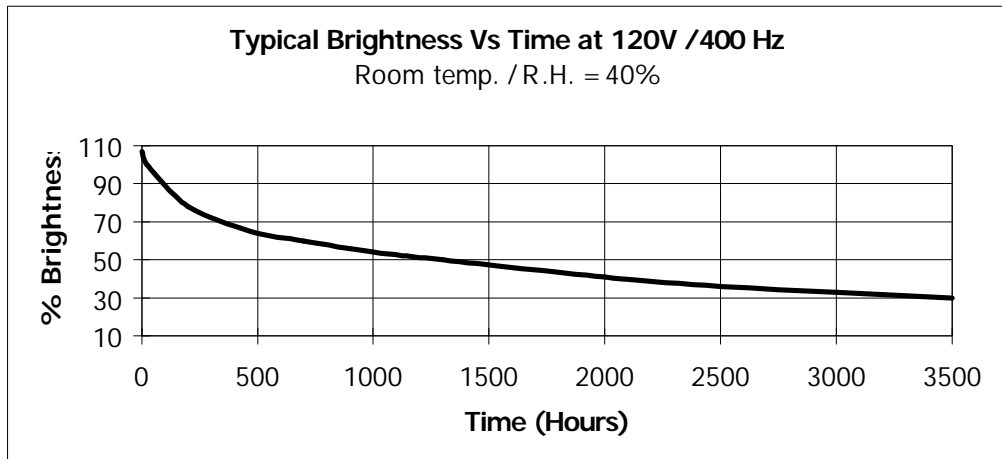
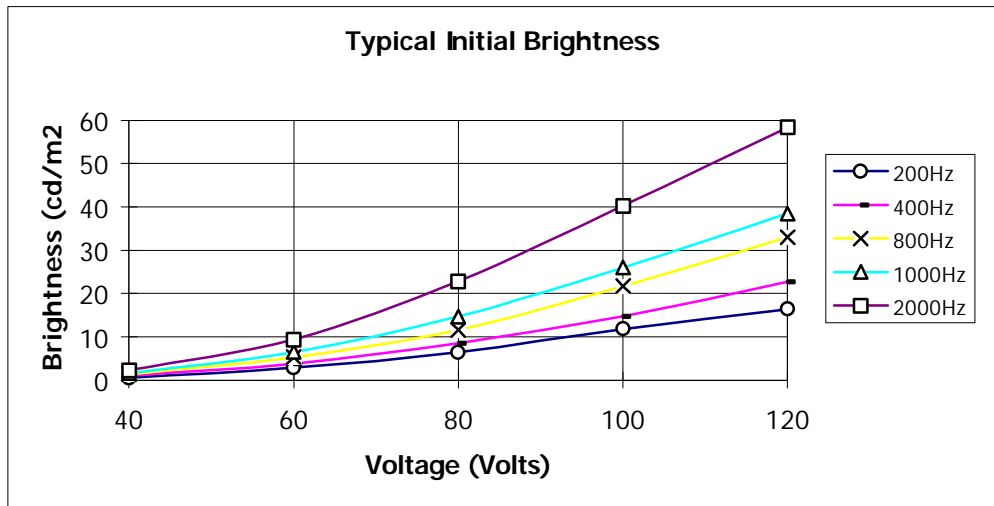
Brightness at 100 Volts / 400Hz	15 cd/m <sup>2</sup>
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Brightness at 100 Volts / 2000Hz	40 cd/m <sup>2</sup>
Chromaticity Coordinates at 100 Volts / 2000Hz	X = 0.315, Y = 0.387
Dynamic Capacitance at 5 VAC in darkness	5.3 nF +/- 0.8 nF



**Typical Initial Brightness (cd/m<sup>2</sup>)**

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Voltage(VR MS)	200Hz	400Hz	800Hz	1000H	2000H
				<b>Z</b>	<b>Z</b>
<b>40</b>	0.5	1	1.3	1.6	2.3
<b>60</b>	2.9	3.8	5.3	6.5	9.4
<b>80</b>	6.4	8.6	11.6	14.7	22.8
<b>100</b>	11.8	14.8	21.7	26	40.3
<b>120</b>	16.4	22.7	33	38.5	58.4



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\*\* Remark: Actual parameters of each lot may vary from typical values within +/-20%.

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## ***Ultra-Marine Electroluminescent Fiber*** ***for Indoors and Outdoors\* Use*** **Product Specifications( Model **01S UM**)**

Overall Diameter 2.1 - 2.6 mm (0.083" - 0.123")

### **Absolute Maximum Ratings**

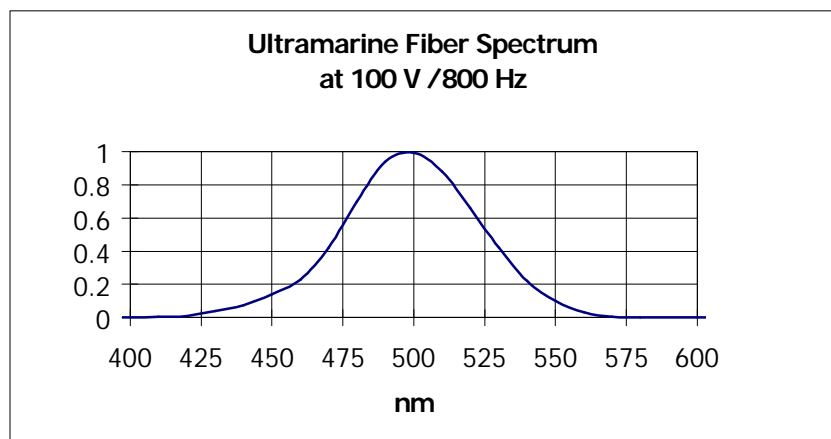
Power Supply Voltage	130 Volts (RMS)
Storage Temperature	-20 to +65 deg. C (-4 to +149 deg.F)
Operating Temperature	-20 to +55 deg. C (-4 to +131 deg.F)
Stretching Force	1 Kg
Bending Diameter	at least 5 times the fiber diameter
Twisting Angle	30 degrees per meter
Average AC current	100 mAmp
Insulation Breakdown Voltage	4000 Volts per IEC 335-1
Flammability	850 deg C per IEC 335-1

### **Electro-Optical Characteristics**

Brightness at 100 Volts / 400Hz
Chromaticity Coordinates at 100V/400 Hz
Brightness at 100 Volts / 800Hz
Chromaticity Coordinates at 100 Volts / 800Hz
Brightness at 100 Volts / 2000Hz
Chromaticity Coordinates at 100 Volts / 2000Hz
Dynamic Capacitance at 5 VAC in darkness

### **Typical\*\* Initial Performance**

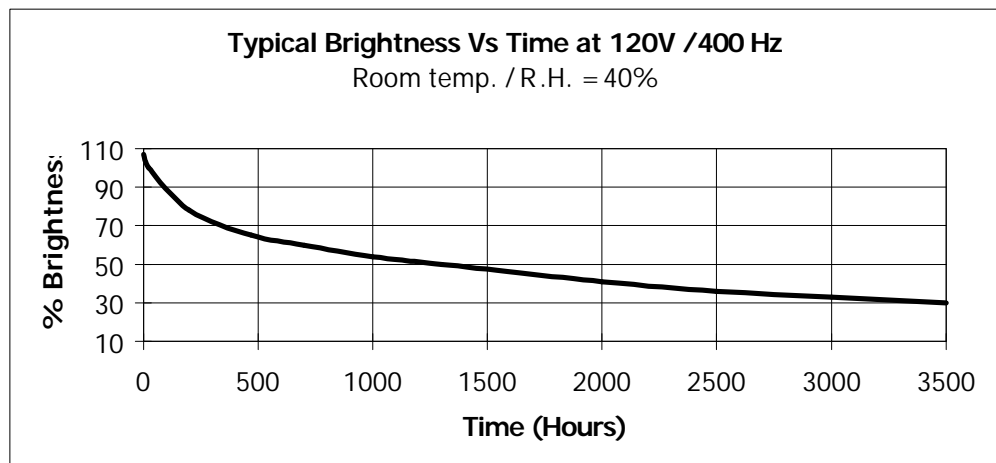
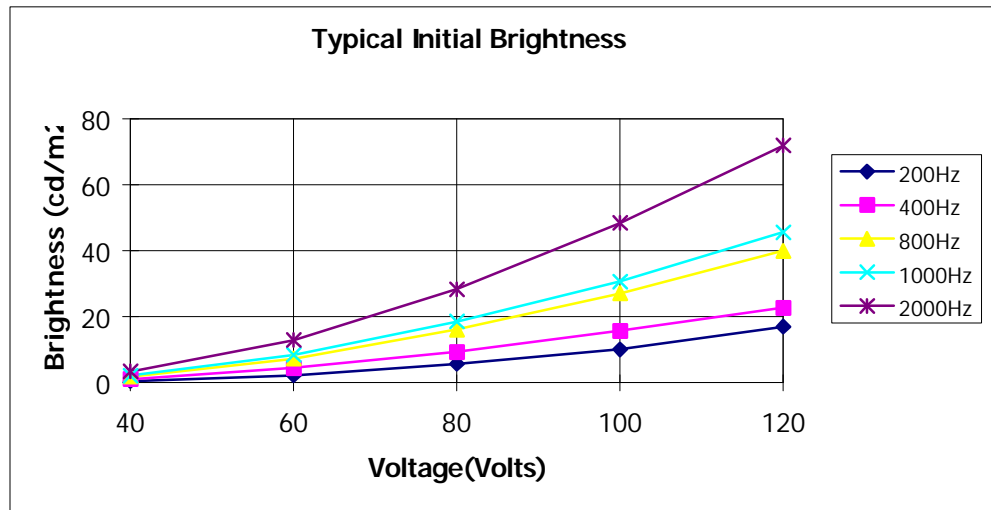
16 cd/m <sup>2</sup>
X = 0.098, Y = 0.425
27 cd/m <sup>2</sup>
X = 0.102, Y = 0.398
48 cd/m <sup>2</sup>
X = 0.107, Y = 0.334
5.3 nF +/- 0.8 nF



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**Typical Initial Brightness (cd/m<sup>2</sup>)**

<b>Voltage (VRMS)</b>	200Hz	400Hz	800Hz	1000H Z	2000H Z
<b>40</b>	0.5	1.1	1.8	2.1	3.4
<b>60</b>	2.2	4.4	7.3	8.4	12.9
<b>80</b>	5.7	9.3	16.1	18.5	28.3
<b>100</b>	10.1	15.7	27.1	30.7	48.4
<b>120</b>	17.0	22.7	39.9	45.6	71.8



\* Remark: Product operation under direct sunlight is not recommended!

\*\* Remark: Actual parameters of each lot may vary from typical values within +/-20%.

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## ***Red Electroluminescent Fiber for Indoors and Outdoors\* Use***

### **Product Specifications ( Model 01S R2)**

Overall Diameter                      2.1 - 2.6 mm ( 0.083" - 0.123" )

#### **Absolute Maximum Ratings**

Power Supply Voltage	130 Volts (RMS)
Storage Temperature	-20 to +65 deg. C (-4 to +14 deg.F)
Operating Temperature	-20 to +55 deg. C (-4 to +131 deg.F)
Stretching Force	1 Kg
Bending Diameter	at least 5 times the fiber diameter
Twisting Angle	30 degrees per meter
Average AC current	100 mAmp

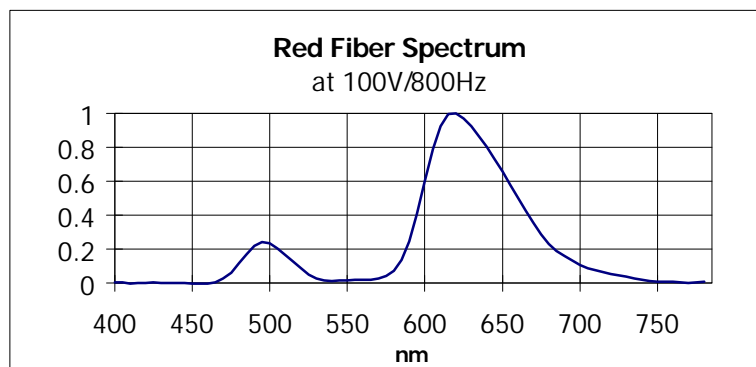
Insulation Breakdown Voltage	4000 Volts per IEC 335-1
Flammability	850 deg C per IEC 335-1

#### **Electro-Optical Characterist**

Brightness at 100 Volts / 400Hz	10.5 cd/m <sup>2</sup>
Chromaticity Coordinates at 100V/400 Hz	X = 0.601, Y = 0.351
Brightness at 100 Volts / 800Hz	18 cd/m <sup>2</sup>
Chromaticity Coordinates at 100 Volts / 800Hz	X = 0.599, Y = 0.350
Brightness at 100 Volts / 2000Hz	36 cd/m <sup>2</sup>
Chromaticity Coordinates at 100 Volts / 2000Hz	X = 0.598, Y = 0.344
Dynamic Capacitance at 5 VAC in darkness	5.3 nF +/- 0.8 nF

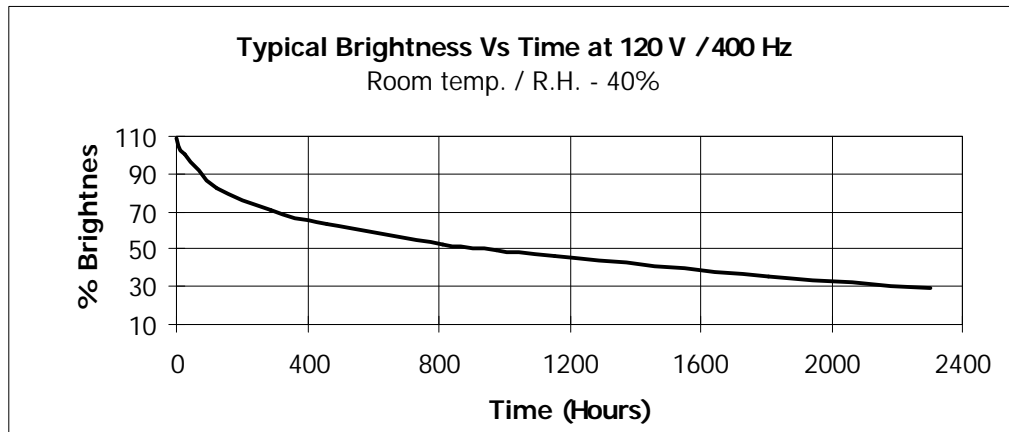
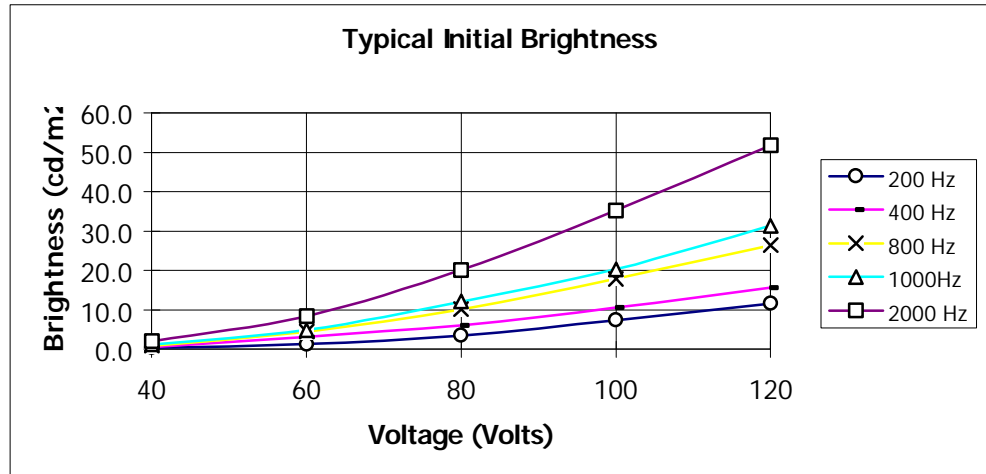
#### **Typical\*\* Initial Performance**

Brightness at 100 Volts / 400Hz	10.5 cd/m <sup>2</sup>
Chromaticity Coordinates at 100V/400 Hz	X = 0.601, Y = 0.351
Brightness at 100 Volts / 800Hz	18 cd/m <sup>2</sup>
Chromaticity Coordinates at 100 Volts / 800Hz	X = 0.599, Y = 0.350
Brightness at 100 Volts / 2000Hz	36 cd/m <sup>2</sup>
Chromaticity Coordinates at 100 Volts / 2000Hz	X = 0.598, Y = 0.344
Dynamic Capacitance at 5 VAC in darkness	5.3 nF +/- 0.8 nF



**Typical Initial Brightness (cd/m<sup>2</sup>)**

<b>Voltage (VRMS)</b>	<b>200 Hz</b>	<b>400 Hz</b>	<b>800 Hz</b>	<b>1000H z</b>	<b>2000 Hz</b>
<b>60</b>	1.3	3.2	4.5	4.9	8.4
<b>80</b>	3.5	6.1	10.2	12.1	20.2
<b>100</b>	4.0	0.4	0.6	0.9	1.2
<b>120</b>	11.6	15.7	26.4	31.4	51.8



\* Remark: Product operation under direct sunlight is not recommended!

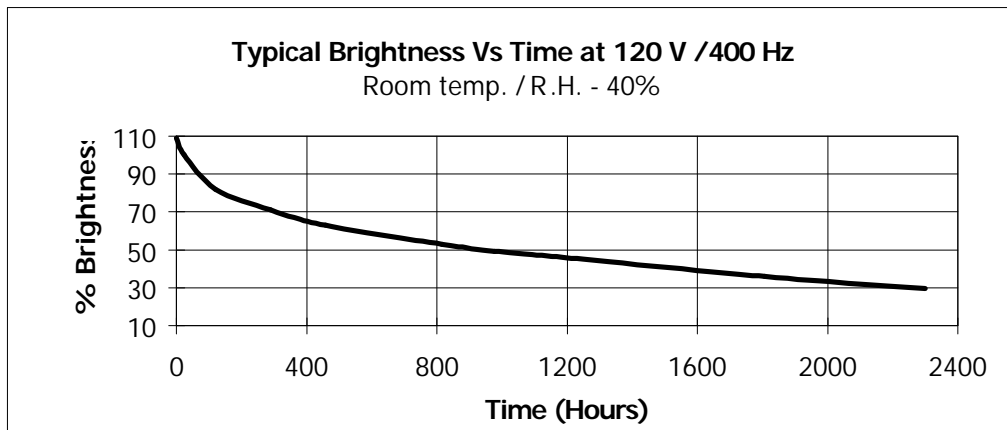
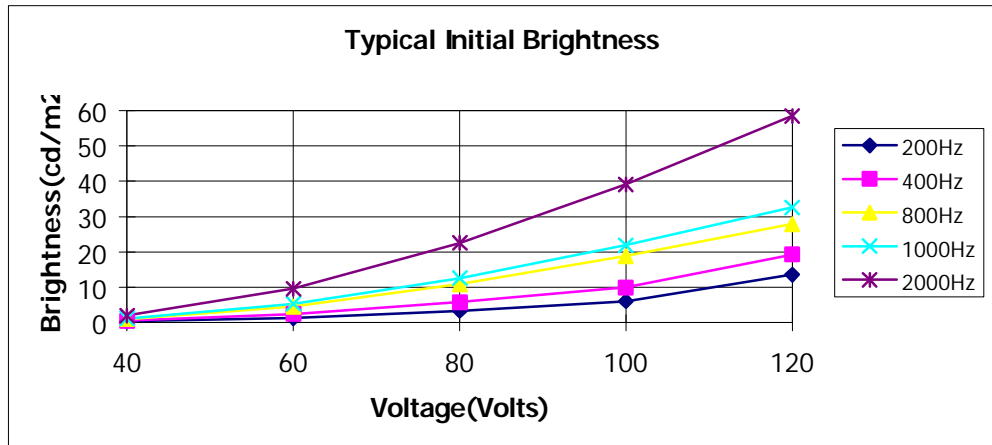
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### Typical Initial Brightnes (cd/m<sup>2</sup>)

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Voltage (VRMS)	200Hz	400Hz	800Hz	1000Hz	2000Hz
40	0.3	0.6	1.0	1.2	2.0
60	1.3	2.5	4.5	5.3	9.6
80	3.3	5.8	10.8	12.6	22.5
100	6.1	10.0	18.8	21.9	39.1
120	13.6	19.3	27.9	32.6	58.5



\* Remark: Product operation under direct sunlight is not recommended!

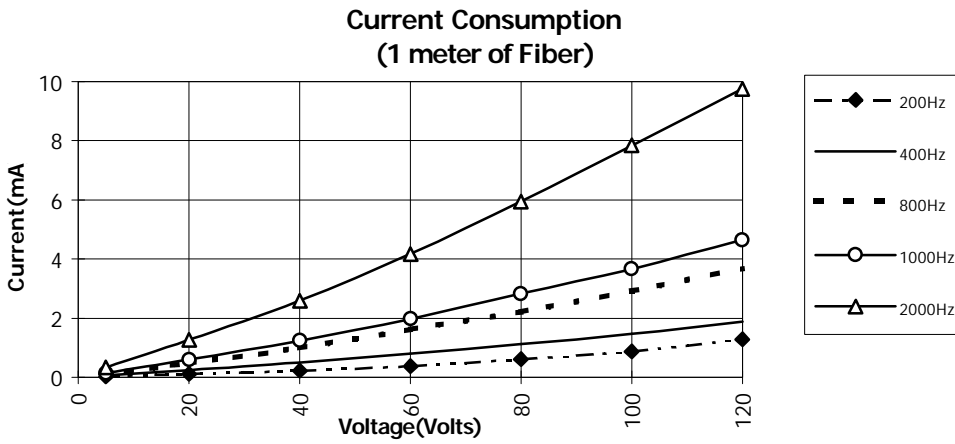
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# Common Characteristics for All Color

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## Current Consumption(mAmp) of 1meter

Voltage(VRMS)	200Hz	400Hz	800Hz	1000Hz	2000Hz
5	0.03	0.06	0.12	0.16	0.33
20	0.12	0.24	0.48	0.61	1.27
40	0.23	0.50	1.00	1.24	2.59
60	0.38	0.80	1.62	1.98	4.17
80	0.62	1.12	2.22	2.83	5.94
100	0.88	1.47	2.92	3.66	7.84
120	1.29	1.90	3.68	4.64	9.76

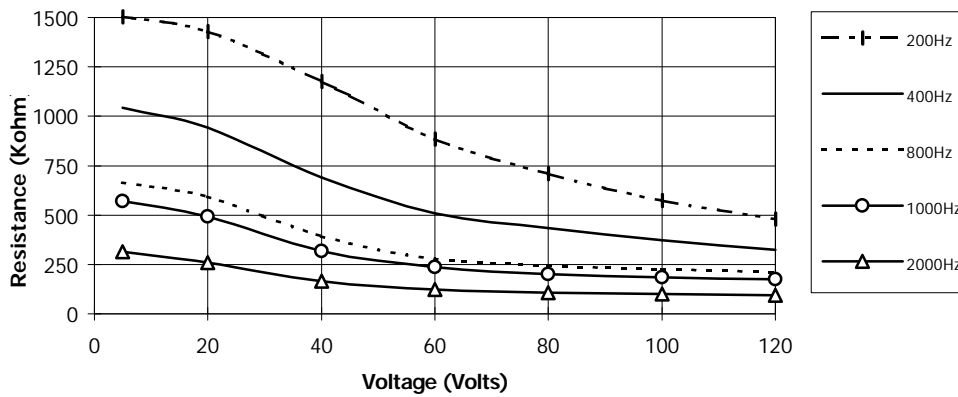


## Equivalent Ohmic Resistance(kOhm) of 1 meter

(Ohmic Component of the Parallel RC Circuit)

Voltage	200Hz	400Hz	800Hz	1000Hz	2000Hz
5	1504	1043	663	569	314
20	1428	942	592	494	259
40	1175	691	393	316	165
60	886	510	280	235	123
80	709	435	243	200	107
100	572	374	226	184	101
120	480	323	210	174	94

Equivalent Ohmic Resistance  
(1 meter)

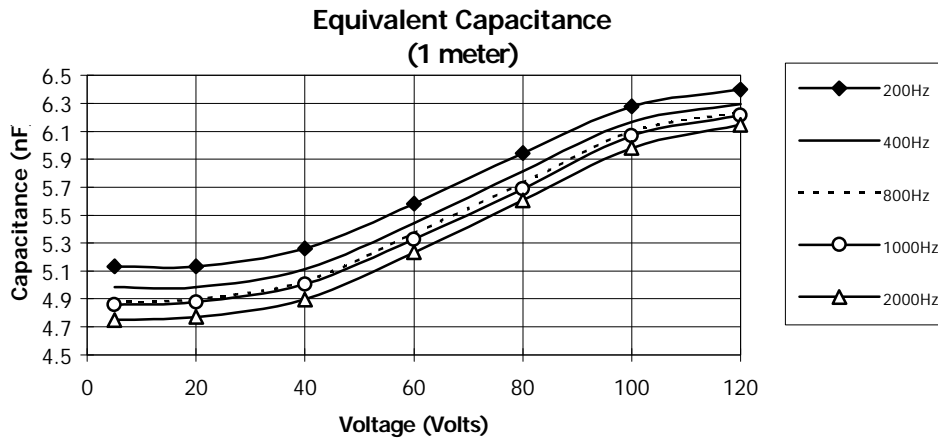


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**Equivalent Capacitance(nF) of 1 meter**

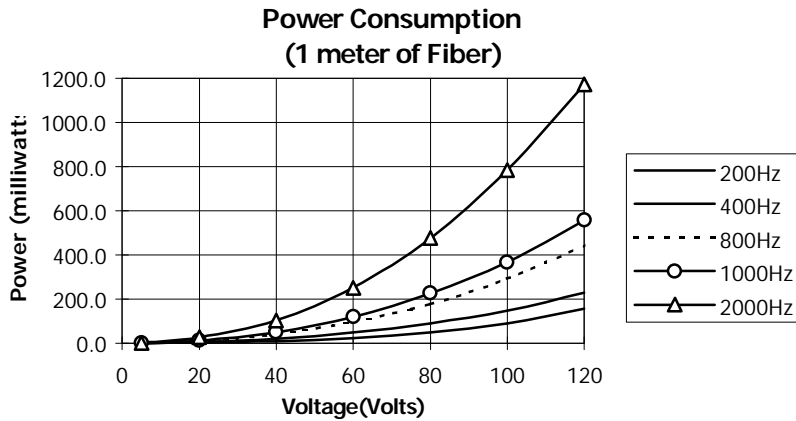
(Capacitive Component of the Parallel RC Circuit)

Voltage (VRMS)	200Hz	400Hz	800Hz	1000Hz	2000Hz
5	5.1	5.0	4.9	4.9	4.7
20	5.1	5.0	4.9	4.9	4.8
40	5.3	5.1	5.0	5.0	4.9
60	5.6	5.4	5.4	5.3	5.2
80	5.9	5.8	5.7	5.7	5.6
100	6.3	6.2	6.1	6.1	6.0
120	6.4	6.3	6.2	6.2	6.1



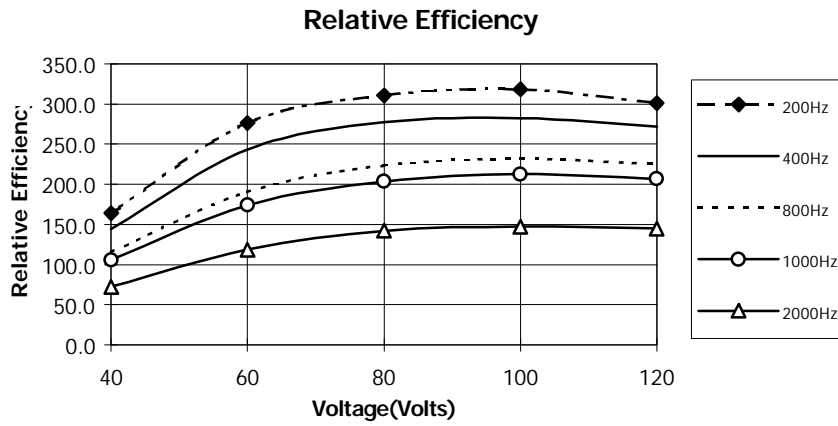
**Power Consumption (milliWatt/meter)**

Voltage (VRMS)	200Hz	400Hz	800Hz	1000Hz	2000Hz
5	0.2	0.3	0.6	0.8	1.7
20	2.5	4.9	9.7	12.2	25.5
40	9.1	20.2	39.9	49.7	103.6
60	22.8	47.8	97.1	118.9	250.5
80	49.6	89.8	177.2	226.6	475.4
100	88.0	147.0	291.8	366.4	783.8
120	154.4	227.5	442.2	557.2	1170.6



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Voltage(VRMS)	<u>Relative Efficiency</u>				
	200Hz	400Hz	800Hz	1000Hz	2000Hz
40	164.0	144.5	115.6	105.9	72.6
60	276.3	243.4	190.6	174.1	118.8
80	310.5	277.1	223.2	203.3	142.2
100	318.2	282.2	231.6	212.8	147.5
120	301.0	271.8	224.9	206.7	145.0



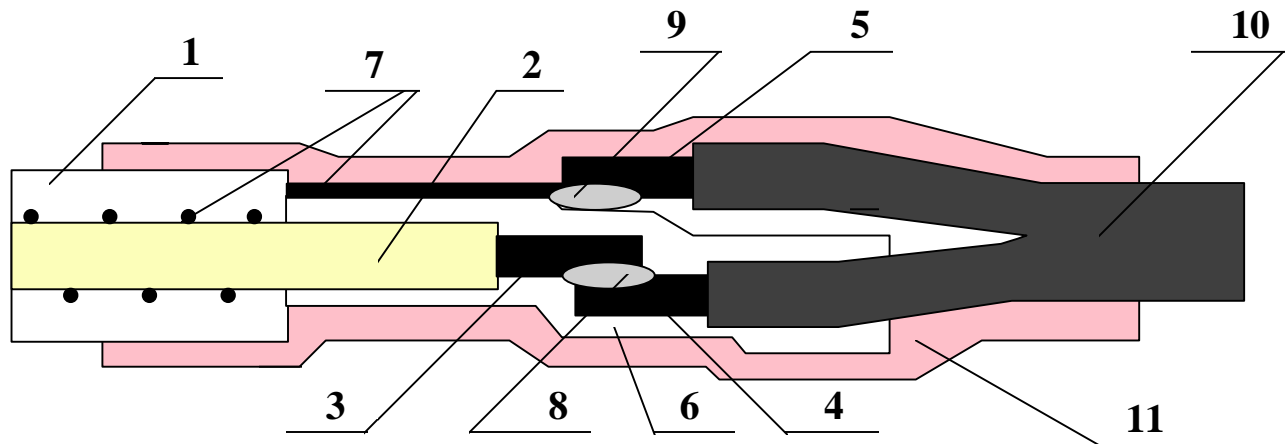
**Contact Preparation**

Fig. 1

***Step by step instructions for connection preparation:***

1. Strip the external insulator(1) off using a usual wire stripper. Be careful not to damage the additional electrodes (7).
2. Pull the free ends of the additional electrodes(7) back 3.Strip the dielectric layers(2) off the core copper electrode(3) using a magnet wire stripper or a sharp knife.
4. Strip the insulation off both edges (4 and 5) of a dual conductor flexible insulated wire(10) leaving the ends ~4cm long.
5. Put a 3 cm long shrinkable tube (6) on the insulated wire (4), solder the edge of wire (4) to the core electrode (3), pull the tube (6) to cover the soldering area (8) and shrike the tube (6) with the heat gun.
6. Bring the free ends of the additional electrodes (7) forward and solder them to the edge of the insulated wire (5).
7. Cover the contact areas (8 and 9) with a 6 cm long shrinkable tube (11) in such way that one side of the tube (11) is on top of the ELF (1) and the other side is on top and shrink it using a heat gun.
8. The ELF can be connected to an AC power source by soldering contacts A and B.

- Recommended Components:

- (6) 3M Shrink Tubing 1/8 inch 80610220230 MW Black  
or Raychem Shrink Tubing CGAT 3/1-0 MW Black
- (11) 3M Shrink Tubing 1/4 inch 80610220255 MW Black  
or Raychem Shrink Tubing CGAT 6/2-0 MW Black

## ELF Free End Termination

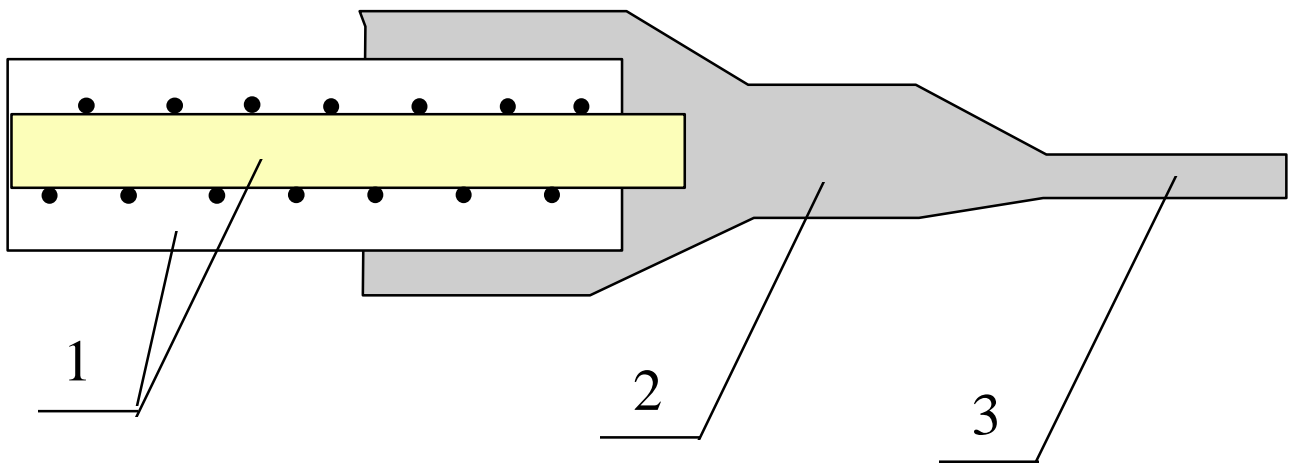


Fig. 3

1. ELF
2. Shrinkable Tube
3. Shrink Edge Sealed off

It is recommended to terminate the free end of the ELF to reduce moisture penetration into the phosphor layers.

- Recommended Components:
  - (2) 3M Shrink Tubing 1/8 inch 80610220230 MW Black  
or Raychem Shrink Tubing CGAT 3/1-0 MW Black