REPLACEMENT LAMP GUIDE

STACKABLE BEACONS

Cat. No.	Original Edwards Lamp No.	Non-halogen Industry Substitute
101CFINH(+)-G1	50LMP-9WH-D	1692
101CFINH(+)-N5	50LMP-12WH-D	15T7DC
101CSINH(+)-G1	50LMP-9WH-D	1692
101CSINH(+)-N5	50LMP-12WH-D	15T7DC
101CST(+)-G1	91B-ST	
101CST(+)-N5	91B-ST	
102LS-FIN-G1		303
102LS-FINH-G1	50LMP-9WH	
102LS-FINH-N5	50LMP-12WH	
102LS-FIN-N5	50LMP-10W	
102LS-SIN-G1		303
102LS-SINH-G1	50LMP-9WH	
102LS-SINH-N5	50LMP-12WH	
102LS-SIN-N5	50LMP-10W	

ROTATING BEACONS

Cat. No.	Original Edwards Lamp No.	Non-halogen Industry Substitute
52(+)-G5-20WH	50LMP-20WH	1638
52(+)-N5-40WH	50LMP-40WH	25T8DC
52(+)-R5	41917-0039	25T8/240V/DC/CL
53(+)-E1	47949-0192	1076
53(+)-G1	46161-0094	163

FLASHING BEACONS

Cat. No.	Original Edwards Lamp No.	Non-halogen Industry Substitute
104CFINH(+)-G1	50LMP-9WH-D	1692
104CFINH(+)-G5	50LMP-9WH-D	1692
104CFINH(+)-N5	50LMP-12WH-D	15T7DC
105FINH(+)-G1	50LMP-20WH	1692
105FINH(+)-G5	50LMP-20WH	1692
105FINH(+)-N5	50LMP-25WH	25T8DC
48CFIN(+)-E1	46161-0144	94
48CFIN(+)-G1-20WH	50LMP-20WH	1692
48CFIN(+)-G5-20WH	50LMP-20WH	1692
48CFIN(+)-N5-25WH	50LMP-25WH	25T8DC
49C(+)-N5-40WH	50LMP-40WH	25T8DC
49C(+)-R5	041917-0039	25T8/240V/DC/CL
50C(+)-G5-20WH	50LMP-20WH	1638
50C(+)-N5-40WH	50LMP-40WH	25T8DC
50C(+)-R5	041917-0039	25T8/240V/DC/CL
51C(+)-E1	46161-0144	94
51C(+)-G1	46161-0094	1638
51C(+)-N5-40W	50LMP-40W	25T8D

STEADY-ON BEACONS

Cat. No.	Original Edwards Lamp No.	Non-halogen Industry Substitute
104CSINH(+)-G1	50LMP-9WH-D	1692
104CSINH(+)-G5	50LMP-9WH-D	1692
104CSINH(+)-N5	50LMP-12WH-D	15T7DC
105SINH(+)-G1	50LMP-20WH	1692
105SINH(+)-G5	50LMP-20WH	1692
105SINH(+)-N5	50LMP-25WH	25T8DC
48CSIN(+)-E1	46161-0144	94
48CSIN(+)-G1-2OWH	50LMP-20WH	1692
48CSIN(+)-G5-20WH	50LMP-20WH	1692
48CSIN(+)-N5-25WH	50LMP-25WH	15T7DC
50CSIN(+)-N5-40WH	50LMP-40WH	163

STROBES

Cat. No.	Strobe Tube
104CST(+)-N5	91B-ST
105HIST(+)-N5	92-ST
105HIST(+)-R5	92-ST
105ST(+)-G1	91B-ST
105ST(+)-N5	91B-ST
105ST(+)-R5	91B-ST
48CD(+)-N5	92-LST
48C(+)-N5	92-LST
48C(+)-R5	92-ST
48CH(+)-N5	92-LST
91(+)-1	91B-ST
92CPLC(+)-N5	92-LST
92CPLC-DF(+)-N5	92-ST
93C(+)-N5	92-ST
93C(+)-R5	92-ST
93CDF(+)-N5	92-ST
93CDF(+)-R5	92-ST
94C(+)-N5	92-ST
94C(+)-R5	92-ST
94CDF(+)-N5	92-ST
94CDF(+)-R5	92-ST
96C(+)-N5	91B-ST
96C(+)-R5	91B-ST
97C(+)-EK	91B-ST
97C(+)-MP	92-ST
97C(+)-S1	92-ST
97CDF(+)-EK	92-ST
97CDF(+)-MP	92-ST
98C(+)-E1-1	91B-ST
98C(+)-G1-1	91B-ST
99C(+)-E1-1	91B-ST



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A light output/light source discussion

Viewer Effective Light Output (VELO)

Effective signaling depends on both perception and understanding of the signal being transmitted. In the case of audible signals it is important to select a tone (e.g. bell, horn, siren) that not only conveys meaning but is also distinguishable from ambient (or background) sounds. Loudness is also an important factor – enough to be perceived over ambient dB but not too much that either distortion or listener damage occur.

These same type of factors affect visible signal selection. Ambient or background light may affect the choice of light source (e.g. steady, flashing, rotating, or strobe) while message type may dictate color choice (e.g. red for stop or danger).

Viewer perception (specifically the ability of the viewer to effectively see and comprehend the visual signal) is perhaps the most important feature of any visual signal.

Edwards' AdaptaBeacons have thus been designed to maximize viewer perceptibility. This focus on Viewer Effective Light Output (VELO) is most noticeable in the Edwards lens design. The unique double fresnel lens results in four illumination characteristics that significantly enhance viewer perception.

1. The refractive feature of the inner fresnels causes the lens to fill; resulting in a rectangular column of light. This increases the "dwell" time of illumination thus significantly enhancing retinal retention.
2. Light sources are positioned in the focal point of the lens – thus enabling the lens-magnifying ring to effectively project the visual signal.
3. The refractive external fresnels function also to diffuse the light. This enhances visibility for viewers located adjacent to the beacon.
4. By ensuring that the lens is filled with light any "hot" spots are eliminated. This is particularly important to viewer perception when strobe light sources are involved. While hotspots generate high light output numbers, they generally result in decreased viewer perception (as viewers squint or turn away in order to avoid the flash). Additionally, the glare tends to wash out lens color resulting in a "white" flash – thus minimizing the color-coded message.

Light Output Data

All manufacturers light output information (Edwards included) needs to be evaluated against many criteria including: distance at which light is to be viewed, lens color, amount of lens pigmentation, viewer perceptibility, and in the case of strobes, VELO.

Currently there are no standardized agency testing criteria for measuring light output of general (non-fire alarm) visual signals. For this reason Edwards has opted to specify strobe tube output in joules, resultant effective candela, and peak candela ratings. See Table 1 for Edwards Strobe Light Output Data.

Strobe Tube Life Data

Strobe tube manufacturers all supply tube life data. Edwards has opted, when using this information, to report effective tube life to only a 25% decrease in light output. (Obviously the greater the decrease the longer will be the stated tube life). See Table 1 for Edwards Strobe Tube Life Data.

Table 1. Edwards Strobe Tube Light Output and Life

Cat. No.	Strobe Tube Cat. No.	Tube Life (hrs)*	Joules	Effective Candela**	Peak Candela
57EDF Series	92-ST	3,000	23	1265	2,300,000
89STR Series	Not Replaceable	1,000	3	150	300,000
89SMSTR Series	Not Replaceable	1,000	3	150	300,000
90 Series	92-LST	5,000	14	770	1,400,000
91B Series	91B-ST	3,000	3	165	300,000
92EX Series	92-LST	5,000	14	770	1,400,000
92EXB Series	92-LST	5,000	14	770	1,400,000
92EXC Series	92-LST	5,000	14	770	1,400,000
92-N5 Series	92-LST	5,000	14	770	1,400,000
92-R5 & -S1 Series	92-ST	3,000	8	440	800,000
92PLC Series	92-LST	5,000	14	770	1,400,000
92PLC-DF Series	92-ST	3,000	8	440	800,000
93 Series	92-ST	3,000	8	440	800,000
93DF Series	92-ST	3,000	11	605	1,100,000
94 Series	92-ST	3,000	8	440	800,000
94DF Series	92-ST	3,000	11	605	1,100,000
94DDV2 Series	92-ST	3,000	8	440	800,000
94DV2 Series	92-ST	3,000	8	440	800,000
95 Series	92-LST	5,000	14	770	1,400,000
96B Series	91B-ST	3,000	3	165	300,000
96DV2 Series	91B-ST	3,000	3	165	300,000
97 Series	92-ST	3,000	8	440	800,000
97DF Series	92-ST	3,000	8	440	800,000
97DEX Series	92-ST	3,000	8	440	800,000
97DEXB Series	92-ST	3,000	8	440	800,000
97DEXC Series	92-ST	3,000	8	440	800,000
97DEXC-GW	92-ST	3,000	8	440	800,000
97DEXBC-GW	92-ST	3,000	8	440	800,000
97DEXCC-GW	92-ST	3,000	8	440	800,000
97EX Series	92-ST	3,000	8	440	800,000
97EXB Series	92-ST	3,000	8	440	800,000
97EXC Series	92-ST	3,000	8	440	800,000
98B Series	91B-ST	3,000	3	165	300,000
99B Series	91B-ST	3,000	10	550	1,000,000
101 Series	91B-ST	3,000	3	165	300,000
102 Series	Not Replaceable	3,000	3	165	300,000
104ST Series	91B-ST	3,000	3	165	300,000
105ST Series	91B-ST	3,000	3	165	300,000
105HIST Series	92-ST	3,000	8	440	800,000
867STR Series	Not Replaceable	1,000	3	150	300,000
868STR Series	Not Replaceable	1,000	3	150	300,000
869STR Series	Not Replaceable	1,000	3	150	300,000

*Calculated at operating power to 75% efficiency.

**Also known as candela seconds. Refer to Technical Reference Appendix for calculation base.

Edwards Incandescent and Halogen Bulb Light Output

For halogen bulbs, the manufacturer's lumen rating is specified. (This measures effective light output in all directions). See Table 2 for bulb light output ratings.

Halogen and Incandescent Bulb Life

Light source life is also an area of some confusion as there are no current industry standards for measurement. At the same time ambient conditions (e.g. voltage & vibration) and duty cycles can significantly effect bulb life. Improper handling can also dramatically decrease both bulb and tube life.

When reporting bulb life Edwards is using manufacturer supplied data (which assumes a 100% constant duty cycle) and then interpolating the effects of the average flash rate (again assuming a constant duty cycle). See Table 2 for bulb Life ratings.

Table 2. Edwards Incandescent and Halogen Bulb Light Output and Life

Cat. No.	Bulb No.	Bulb Rating	Mfrs. Lumen Rating	Calculated Lamp Life*	Projected Lamp Life**
48FIN-E1	Industry Trade 94	15W	189	700	1,520
48FIN-G1-20WH Series	50LMP-20WH or Industry Trade 1692	20W Halogen 15W	226 110	20,000 1,000	25,000 6,350
48FIN-G5-20WH Series	50LMP-20WH or Industry Trade 1692	20W Halogen 15W	226 110	20,000 1,000	25,000 6,350
48FIN-N5-25WH Series	50LMP-25WH or Industry Trade 25T8DC	25W Halogen 25W	175 235	20,000 1,000	25,000 1,000
48SIN-E1	Industry Trade 94	15W	189	700	1,520
48SIN-G1-20WH Series	50LMP-20WH or Industry Trade 1692	20W Halogen 15W	226 110	20,000 1,000	20,000 6,350
48SIN-G5-20WH Series	50LMP-20WH or Industry Trade 1692	20W Halogen 15W	226 110	20,000 1,000	20,000 6,350
48SIN-N5-25WH Series	50LMP-25WH or Industry Trade 25T8DC	25W Halogen 25W	175 235	20,000 1,000	20,000 1,000
49-N5-40WH Series	50LMP-40WH	40W Halogen	265	20,000	25,000
49-R5 Series	P-041917-0039 or Industry Trade 25T8/240V/DC/CL	25W	232	200	120
50-G5-20WH Series	50LMP-20WH	20W Halogen	226	20,000	25,000
50-N5-40WH Series	50LMP-40WH	40W Halogen	265	20,000	25,000
50-R5 Series	P-041917-0039 or Industry Trade 25T8/240V/DC/CL	25W	232	200	120
50SIN-N5-40WH	50LMP-40WH	40W Halogen	265	20,000	25,000
51-E1 Series	Industry Trade 94	15W	189	700	1,520
51-G1 Series	Industry Trade 1638	25W	402	500	3,180
51-G5-20W Series	Industry Trade 1638	25W	402	500	3,180
51-N5-40W Series	50LMP-40W (6 ea) or P-041695-0118 (1ea)	40W	266	1,500	3,920
51SIN-G1 Series	Industry Trade 1638	25W	402	500	3,180
51SIN-N5-40W Series	50LMP-40W (6 ea) or P-041695-0118 (1ea)	40W	266	1,500	3,920
52-N5 Series	50LMP-40WH	40W Halogen	265	20,000	25,000
52-G5 Series	50LMP-20WH	20W Halogen	226	20,000	25,000
52-R5 Series	P-041917-0039 or Industry Trade 25T8/240/DC/CL	25W	232	200	120
52EX-N5-40W Series	50LMP-40W (6 ea) or P-041695-0118 (1ea)	40W	266	1,500	3,920
52EXB-N5-40W Series	50LMP-40W (6 ea) or P-041695-0118 (1ea)	40W	266	1,500	3,920
52EXC-N5-40W Series	50LMP-40W (6 ea) or P-041695-0118 (1ea)	40W	266	1,500	3,920
53-E1 Series	Industry Trade 1076	25W	402	200	430
53-G1 Series	Industry Trade 1638	25W	402	500	3,180
53DR-GW	Industry Trade 1638	25W	402	500	3,180
53DC-GW	Industry Trade 1638	25W	402	500	3,180
53DEX-G1 Series	Industry Trade 1638	25W	402	500	3,180

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Cat. No.	Bulb No.	Bulb Rating	Mfrs. Lumen Rating	Calculated Lamp Life*	Projected Lamp Life**
53DEXB-G1 Series	Industry Trade 1638	25W	402	500	3,180
53DEXC-G1 Series	Industry Trade 1638	25W	402	500	3,180
53EX-E1 Series	Industry Trade 1076	25W	402	200	430
53EX-G1 Series	Industry Trade 1638	25W	402	500	3,180
53EXB-E1 Series	Industry Trade 1076	25W	402	200	430
53EXB-G1 Series	Industry Trade 1638	25W	402	500	3,180
53EXC-E1 Series	Industry Trade 1076	25W	402	200	430
53EXC-G1 Series	Industry Trade 1638	25W	402	500	3,180
58-N5-100WH Series	100Q/CL/DC/ 120V	100W Halogen	1800	1,000	2,610
101FIN-E1 Series	Industry Trade 94	15W	189	700	1,520
101FINH-G1 Series	50LMP-9WH-D	9W Halogen	52	12,000	15,000
101FINH-N5 Series	50LMP-12WH-D	12W Halogen	70	20,000	25,000
101SIN-E1 Series	Industry Trade 94	15W	189	700	1,520
101SINH-G1 Series	50LMP-9WH-D or Industry Trade	9W Halogen	52	12,000	15,000
101SINH-N5 Series	50LMP-12WH-D or Industry Trade	12W Halogen	70	20,000	25,000
102LS-FIN-G1	Industry Trade 303	10W	66	10,000	10,000
102LS-FINH-G1	50LMP-9WH	9W Halogen	52	12,000	15,000
102LS-FIN-N5	50LMP-10W	10W	66	2,500	2,500
102LS-FINH-N5	50LMP-12WH	12W Halogen	70	20,000	25,000
102LS-SIN-G1	Industry Trade 303	10W	66	10,000	10,000
102LS-SINH-G1	50LMP-9WH	9W Halogen	52	12,000	15,000
102LS-SIN-N5	50LMP-10W	10W	66	2,500	2,500
102LS-SINH-N5	50LMP-12WH	12W Halogen	70	20,000	25,000
104FINH-G1 Series	50LMP-9WH-D or Industry Trade 1692	9W Halogen 15W	52 110	12,000 1,000	15,000 6,350
104FINH-G5 Series	50LMP-9WH-D or Industry Trade 1692	9W Halogen 15W	52 110	12,000 1,000	15,000 6,350
104FINH-N5 Series	50LMP-12WH-D or Industry Trade 15T7DC	12W Halogen 15W	70 99	20,000 1,000	25,000 1,630
104SINH-G1 Series	50LMP-9WH-D or Industry Trade 1692	9W Halogen 15W	52 110	12,000 1,000	15,000 6,350
104SINH-G5 Series	50LMP-9WH-D or Industry Trade 1692	9W Halogen 15W	52 110	12,000 1,000	15,000 6,350
104SINH-N5 Series	50LMP-12WH-D or Industry Trade 15T7DC	12W Halogen 15W	70 99	20,000 1,000	25,000 1,630
105FINH-G1 Series	50LMP-20WH	20W Halogen	226	20,000	25,000
105FINH-G5 Series	50LMP-20WH	20W Halogen	226	20,000	25,000
105FINH-N5 Series	50LMP-25WH	25W Halogen	175	20,000	20,000
105SINH-G1 Series	50LMP-20WH	20W Halogen	226	20,000	25,000
105SINH-G5 Series	50-LMP-20WH	20W Halogen	226	20,000	25,000
105SINH-N5 Series	50LMP-25WH	25W Halogen	175	20,000	20,000

*Calculated by the manufacturer at continuous operation at operating voltage.
**Projected at 65FPM and 50% duty cycle.

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Edwards LED Light Output

For LEDs, the manufacturer's lumen rating per LED is used as the basis for calculations. However it should be noted that with LEDs light output ratings are relatively meaningless as LED viewing angle and lens optics have a more significant effect on viewer perceptibility.

Table 3. Edwards LED Light Output and Life

Cat. No.	LED Color	LED Life (hrs)	Lumen Rating
101FLED-G1	Red	100,000	28
101FLED-G1	Amber	100,000	38
101FLED-G1	Blue	100,000	35
101FLED-G1	Green	100,000	102
101FLED-N5	Red	100,000	28
101FLED-N5	Amber	100,000	38
101FLED-N5	Blue	100,000	35
101FLED-N5	Green	100,000	102
101SLED-G1	Red	100,000	28
101SLED-G1	Amber	100,000	38
101SLED-G1	Blue	100,000	35
101SLED-G1	Green	100,000	102
101SLED-N5	Red	100,000	28
101SLED-N5	Amber	100,000	38
101SLED-N5	Blue	100,000	35
101SLED-N5	Green	100,000	102
102FLED-G1	Red	100,000	135
102FLED-G1	Amber	100,000	346
102FLED-G1	Blue	100,000	135
102FLED-G1	Green	100,000	135
102FLED-N5	Red	100,000	135
102FLED-N5	Amber	100,000	346
102FLED-N5	Blue	100,000	135
102FLED-N5	Green	100,000	135
102SLED-G1	Red	100,000	135
102SLED-G1	Amber	100,000	346
102SLED-G1	Blue	100,000	135
102SLED-G1	Green	100,000	135
102SLED-N5	Red	100,000	135
102SLED-N5	Amber	100,000	346
102SLED-N5	Blue	100,000	135
102SLED-N5	Green	100,000	135
48FLED-G1	Red	100,000	28
48FLED-G1	Amber	100,000	38
48FLED-G1	Blue	100,000	35
48FLED-G1	Green	100,000	102
48FLED-N5	Red	100,000	28
48FLED-N5	Amber	100,000	38
48FLED-N5	Blue	100,000	35
48FLED-N5	Green	100,000	102
48SLED-G1	Red	100,000	28
48SLED-G1	Amber	100,000	38
48SLED-G1	Blue	100,000	35
48SLED-G1	Green	100,000	102
48SLED-N5	Red	100,000	28
48SLED-N5	Amber	100,000	38
48SLED-N5	Blue	100,000	35
48SLED-N5	Green	100,000	102
103-RBA-G1	Red Blue Amber	100,000 100,000 100,000	120 90 307
103-RGA-G1	Red Green	100,000 100,000	120 90

	Amber	100,000	307

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Cat. No.	LED Color	LED Life (hrs)	Lumen Rating
103-RBA-N5	Red	100,000	120
	Blue	100,000	90
	Amber	100,000	307
103-RGA-N5	Red	100,000	120
	Green	100,000	90
	Amber	100,000	307
103I-RBA-G1	Red	100,000	120
	Blue	100,000	90
	Amber	100,000	307
103I-RGA-G1	Red	100,000	120
	Green	100,000	90
	Amber	100,000	307
103I-RBA-N5	Red	100,000	120
	Blue	100,000	90
	Amber	100,000	307
103I-RGA-N5	Red	100,000	120
	Green	100,000	90
	Amber	100,000	307
104FLED-G1	Red	100,000	28
104FLED-G1	Amber	100,000	38
104FLED-G1	Blue	100,000	35
104FLED-G1	Green	100,000	31
104FLED-N5	Red	100,000	28
104FLED-N5	Amber	100,000	38
104FLED-N5	Blue	100,000	35
104FLED-N5	Green	100,000	31
104SLED-G1	Red	100,000	28
104SLED-G1	Amber	100,000	38
104SLED-G1	Blue	100,000	35
104SLED-G1	Green	100,000	31
104SLED-N5	Red	100,000	28
104SLED-N5	Amber	100,000	38
104SLED-N5	Blue	100,000	35
104SLED-N5	Green	100,000	31
105FLED-G1	Red	100,000	28
105FLED-G1	Amber	100,000	38
105FLED-G1	Blue	100,000	35
105FLED-G1	Green	100,000	102
105FLED-N5	Red	100,000	28
105FLED-N5	Amber	100,000	38
105FLED-N5	Blue	100,000	35
105FLED-N5	Green	100,000	102
105SLED-G1	Red	100,000	28
105SLED-G1	Amber	100,000	38
105SLED-G1	Blue	100,000	35
105SLED-G1	Green	100,000	102
105SLED-N5	Red	100,000	28
105SLED-N5	Amber	100,000	38
105SLED-N5	Blue	100,000	35
105SLED-N5	Green	100,000	102

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Technical Reference Information
Light Output Descriptions

When comparing two different warning lights, the first question usually asked is how bright are these lights and how do they compare to one another? This can be a complicated question when one is comparing very different light sources such as rotating incandescent lights and xenon strobe lights. Three different commonly used specified "intensity" ratings are discussed below.

1. PEAK CANDELA or PEAK CANDLEPOWER – This quantifies the maximum light intensity generated by a flashing light during its light pulse. It indicates nothing about how bright the light appears to the human eye. Peak candela alone cannot be used to directly compare two warning lights. In addition there is no set multiplication factor for converting peak candela, a unit of luminous intensity, to either candela seconds or effective candela, both units of luminous energy.

2. CANDELA SECONDS or CANDLEPOWER SECONDS – This quantifies the actual light energy contained in a pulse of light. Candela seconds is used by SAE (Society of Automotive Engineers) and by most State Highway Patrol Divisions to specify the minimum requirements of light output from a flashing light because flash energy has been shown to be a relatively accurate and fair way of comparing radically different types of lights such as incandescent rotators and xenon strobe lights.

3. EFFECTIVE CANDELA or EFFECTIVE CANDLEPOWER – Effective candela is based on candela seconds and attempts to equate the brightness of a flashing light source to the brightness of a steady burning source. If a flashing light has an effective candela rating of 100 then it will be visible at the same distance as a 100 candela steady burn source. The National Bureau of Standards, the FAA, and the Illuminating Engineering Society use effective candela in specifying intensities of flashing light sources because this rating is the most meaningful when it becomes necessary to predict the visible range of flashing lights verses steady burn light sources.

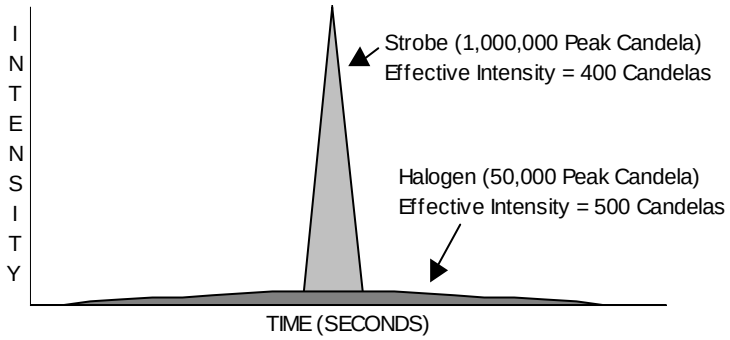
Since one unit of "this" doesn't really equal two units of "that", the lighting manufacturing industry in general assimilates for easy laymen terms the following:

50 Candela assimilates to 100,000 Peak Candlepower which assimilates to 1 Joule

Just remember, a Joule is a measurement of electric energy, while Candlepower is a measurement of apparent brightness. Therefore, these comparisons are only approximate.

As shown in the diagram on the right, a strobe will have a much higher peak candela rating than a halogen rotator. However, the overall effective intensity is determined by the area under the curve. In comparing the two lights, the halogen rotator would have a higher perceived brightness of the two lights.

Strobe vs. Halogen Rotator Intensities



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Technical Reference Information
Output Flash Brightness

Approximate Effective Candela Rating per Joule:

Lens Color	Strobe Output	Halogen Output
Clear	45-55 Candela/Joule	45-55 Candela/Joule
Amber	30-40 Candela/Joule	32-43 Candela/Joule
Blue	17-23 Candela/Joule	7-10 Candela/Joule
Green	15-20 Candela/Joule	7-15 Candela/Joule
Red	7-10 Candela/Joule	10-15 Candela/Joule

Please note that the actual light output of a typical strobe warning light will depend upon a number of factors. These factors can vary the light output by a factor of 10 or more for a given number of Joules per flash. Joules is a measurement of electric energy, while Candela is a measurement of apparent brightness. Some of the factors involved are:

-Color of lens
-Size and efficiency of lens
-Physical shape of strobe lamp and arrangement within the lens (optical coupling)
-Efficiency of the strobe lamp itself

Determining Effective Candela:

Candela/Joule Rating										
		10	15	20	25	30	35	40	45	50
Flash Power	3 Joules	30	45	60	75	90	105	120	135	150
	10 Joules	100	150	200	250	300	350	400	450	500
	15 Joules	150	225	300	375	450	525	600	675	750

Example: For a 10 Joule light in an Amber lens:
10 Joules x 40 Candela/Joule = 400 Effective Candela since 50 Candela assimilates to 100,000 Peak Candlepower = 400 Effective Candela x 100,000/50 = 800,000 Peak Candela

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