



GE Lighting

Biax™ 2D™ 18W with integral control gear

Biax™ 2D™ 18W Compact Fluorescent Lamps Product Information for Original Equipment Manufacturers

DESCRIPTION

The new generation of Biax™ 2D™ lamps with integral control gear is for easy and efficient integration into the design of new fittings. The cap is inverted to minimise overall depth. All Biax™ 2D™ lamps are suitable for use in circular or square fittings either wall or ceiling mounted both for interiors and exteriors. The circular light output spreads over a large area which means there is no need for expensive optics in the fixture. The 'circular' design produces even light distribution whilst avoiding both end shadowing and dark areas.

FEATURES

- Operates on 220-240V/ 50Hz
- Lifetime of 10,000 hours
- Available in four colour temperatures - 2700, 3000, 3500, 4000 K
- High colour rendering index $R_a = 82$
- Same light output in any burning position

APPLICATION AREAS

- residential
- domestic
- hotels/motels
- restaurants
- utility areas
- task lighting

COMPLIANCE WITH IEC STANDARDS

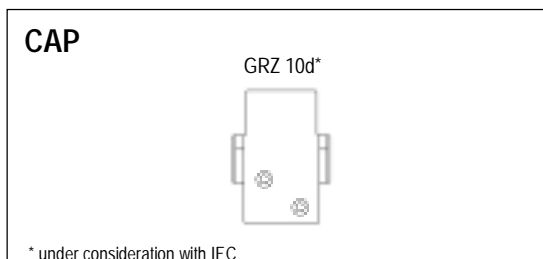
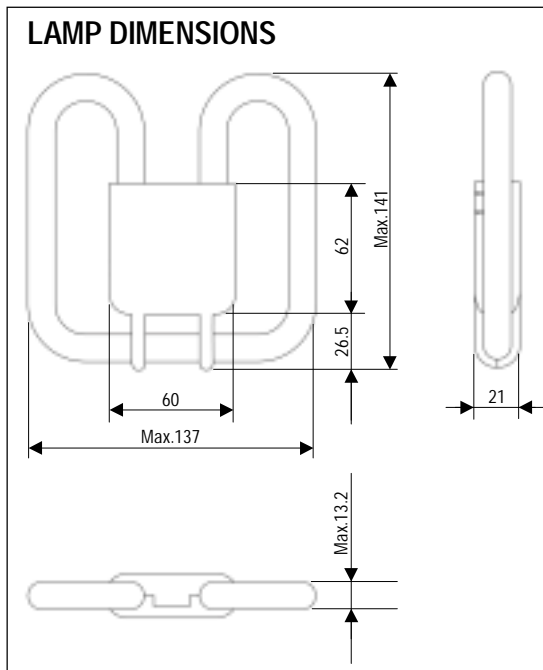
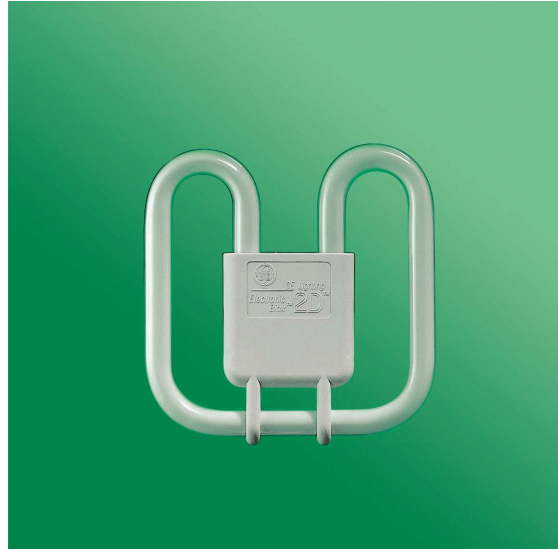
GE Lighting compact fluorescent lamps comply with IEC 60901 and IEC 61199.

PATENT INFORMATION

Biax™ 2D™ lamps with integral control gear are protected by European Patent No. 0057974 and with other patents pending.

PHYSICAL DATA

		18W
Length	mm	140
Width	mm	140
Weight	grams	90



Biax™ 2D™ 18W lamp with integral control gear



LAMP SPECIFICATION

Nominal wattage	W	18
Energy Efficiency Class		A
Cap		GRZ 10d*
Supply		230-240V / 50Hz
Available colour range	K	2700, 3000, 3500, 4000

Ordering information

CCT 2700	- Product Description: FLE18W/827/GR10	- Product Code: 92593
CCT 3000	- Product Description: FLE18W/830/GR10	- Product Code: 92592
CCT 3500	- Product Description: FLE18W/835/GR10	- Product Code: 92594
CCT 4000	- Product Description: FLE18W/840/GR10	- Product Code: 92595

Input parameters at 230V/ 50Hz

Input power	W	18.0
Input current	A _{rms}	0.133
Power Factor		> 0.55
Total Harmonic Distortion	%	< 150
Drop Out Voltage	V _{rms}	> 176

Lamp performance

Allowed line voltage range	V	207... 253
Starting time	s	1
Starting temperature	°C	-20
Rated lumens at 100hrs	lm	1150
Luminous efficacy	lm/W	64
Time to reach 80% lumens	s	15
Temperature range to reach 90% light output	°C	+20 ... +50
Colour rendering index	R _a	82
UV PET	h ± 10%	800
UV C - 220-280 nm	μW/(cm ²)/500 lux	0
UV B - 280-315 nm	μW/(cm ²)/500 lux	3.0996
UV A - 315-400 nm	μW/(cm ²)/500 lux	17.2567

Lifetime performance

Rated life	h	10 000
Lumen maintenance		
at 2000 h	%	88
at 4000 h	%	85
at 10000 h	%	83
Rapid cycling switches (30 s on - 4.5 min off)	cycles	> 20 000

Applicable regulations

Conducted EMI	EN55015
Radiated EMI	EN55015
Immunity	IEC61547
Safety	EN60968

* under consideration with IEC

LAMP LIFE AND LUMEN MAINTENANCE

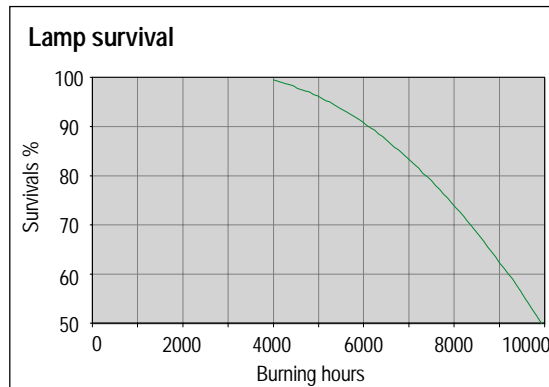
Cathodes of a compact fluorescent lamp lose their electron-emissivity during life due to the evaporation of emission mixture. When the deterioration reaches a certain level, the cathode breaks. Typical lifetime characteristics are based on GE Lighting's measurements according to the relevant IEC standards. The declared lamp life is the median life, which is when 50% of the lamps from a large sample batch would have failed. Real lifetime figures may depend on actual application. For instance, extreme ambient temperature or supply voltage reduces the expected life.

Lumen maintenance graph shows how the luminous output decreases throughout life. The main causes of the light depreciation are the deterioration of phosphor coating and the lamp blackening due to the deposition of evaporated emission mixture on the glass tube. These effects are unavoidable. Lumen maintenance curve presented here for Biax™ 2D™ 18W lamp with integral control gear is based on lumen readings under laboratory conditions.

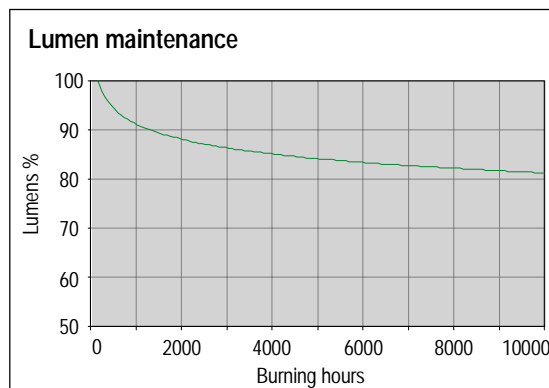
Test conditions:

- Photometric sphere
- Vertical, cap up burning position
- Switching cycle: 165 minutes On – 15 minutes Off
- High frequency operation
- 25°C ambient temperature

Burning hours	Survival %
2000	100
4000	98
10000	51



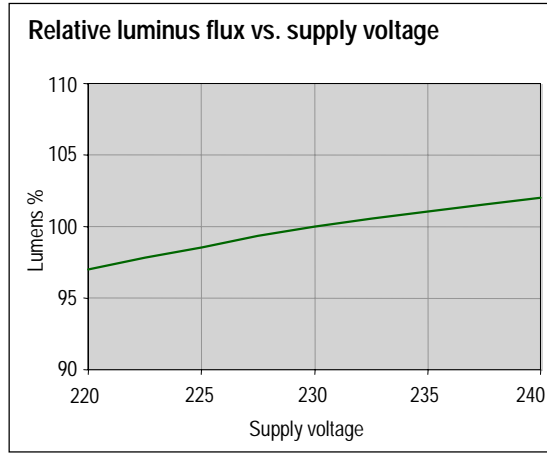
Burning hours	Lumen %
2000	88
4000	85
10000	83



EFFECT OF MAINS VARIATIONS

The luminous output and the lamp power slightly depends on the supply voltage. The following graph shows the effect of supply voltage variation on lamp performance.

Supply voltage	Lumen %	Power %
220	97	96
230	100	100
240	102	104



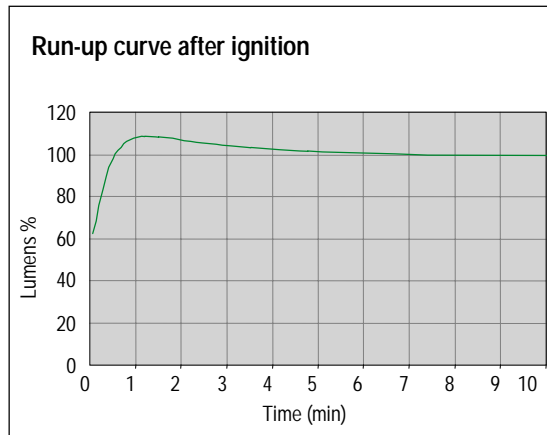
Warm-up

Following curve shows the relative light output as the function of time. By definition, warm-up time indicates that time when the luminous output of a lamp reaches the 80% of its steady-state value. The second curve shows the initial ramp-up.

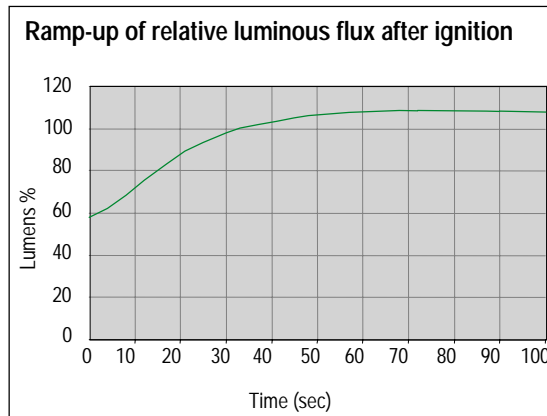
Test conditions:

- 25°C ambient temperature
- cap up, horizontal burning position

Time (min)	Lumen %
1	108
2	107
3	104
4	102
5	101
6	100
7	100
8	100
9	100
10	100



Time (s)	Lumen %
10	71
20	89
30	98
40	103
50	106
60	108
70	109
80	109
90	108
100	108

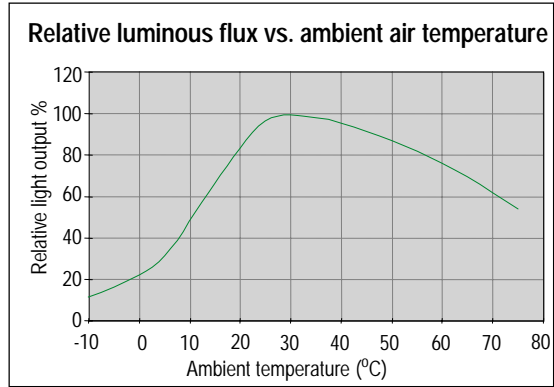


INFLUENCE OF AMBIENT TEMPERATURE

Lamp performance

The lamp performance parameters, such as luminous output, lamp voltage and power depend on the mercury vapour pressure in the discharge tube. The mercury vapour pressure is a function of the thermal conditions around the lamp. The following curve shows the relative luminous output as function of the ambient temperature. Tests were performed in draught-free air under thermally controlled conditions.

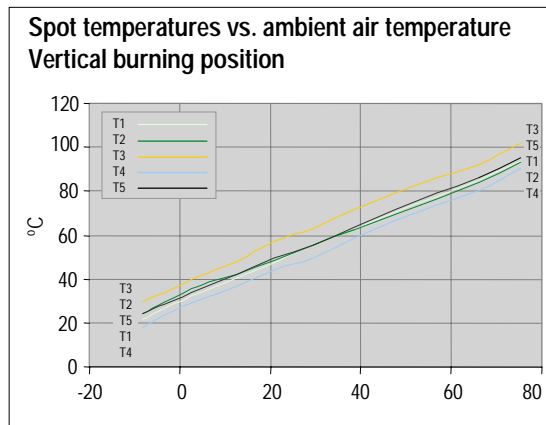
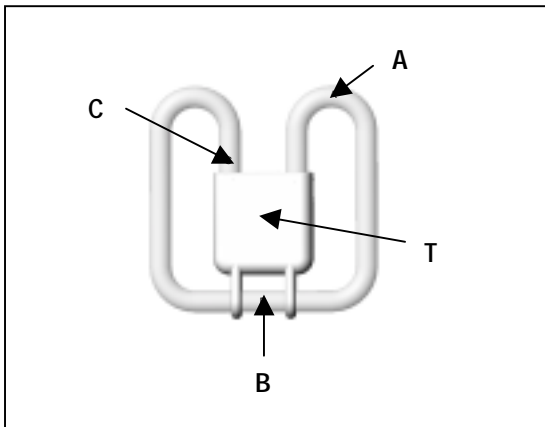
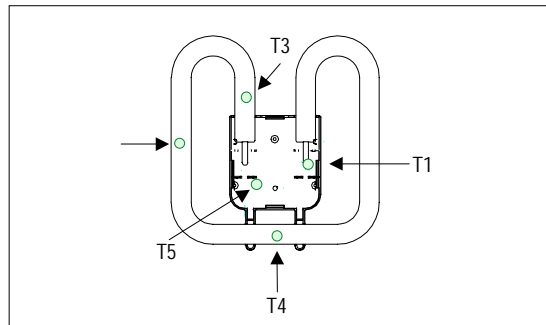
T_{amb} (°C)	Lumen %
-10	12
0	23
10	50
20	84
30	100
40	97
50	87
60	76
70	62
80	42



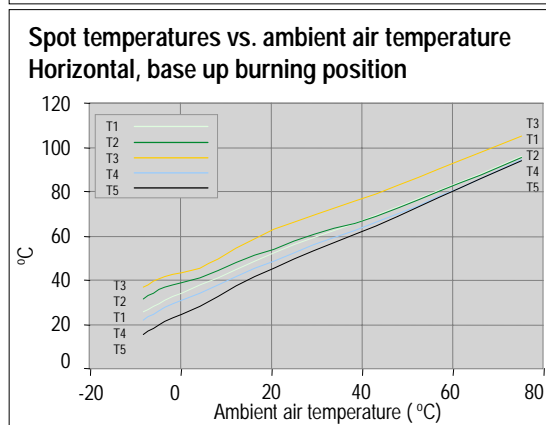
Lamp temperatures

The following charts shows the lamp temperatures in two burning positions at five spots, as the drawing indicates.

The Biax™ 2D™ lamps with integral gear can be operated in any position except where bend A is lower than leg B. This limitation is necessary to ensure that region C of the cap is kept as cool as possible. Region C should not exceed 140°C.



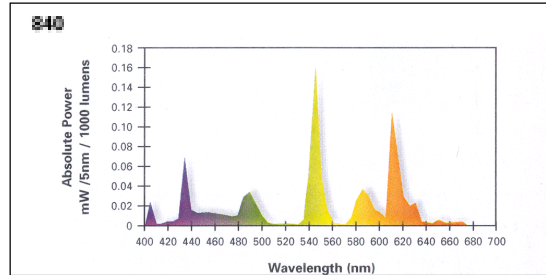
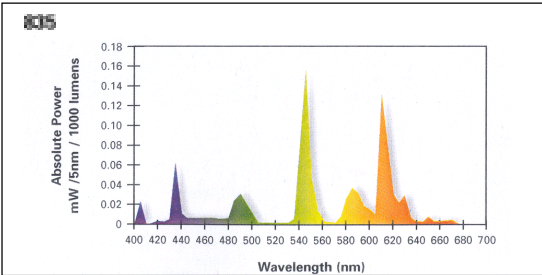
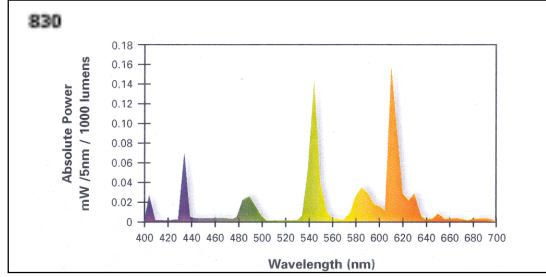
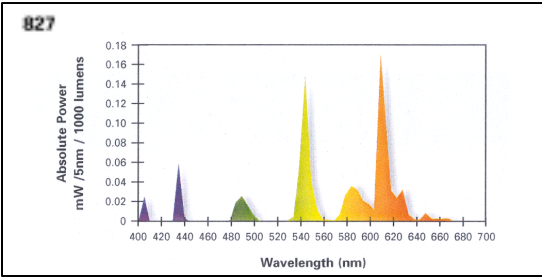
The maximum temperature on the plastic housing (T) should not exceed 90°C in order to maintain the rated lamp life. This requirement indirectly sets the operating environment, size and type of the fixture that the product operates within. For optimum performance in a fitting, consideration must be given to the heating effect of the lamp.



LAMP COLOUR

Spectral Power Distribution

Spectral Power Distribution curves are given in the following diagrams.

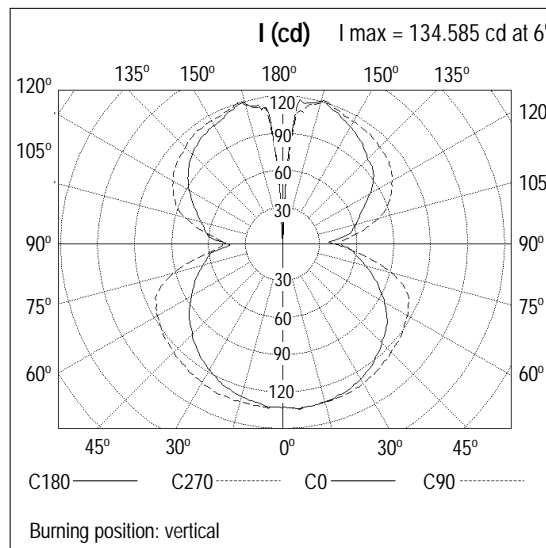
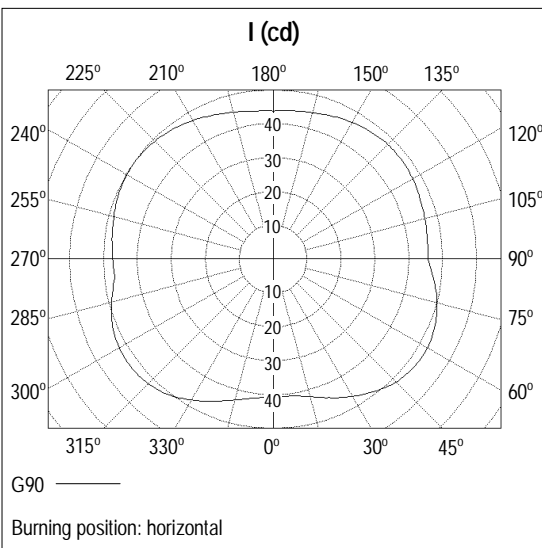


Colour specification according to CIE 1931

CCT (K)	X	Y	CRI
2700	0.455	0.410	82
3000	0.440	0.403	82
3500	0.413	0.393	82
4000	0.376	0.387	82

LUMINOUS INTENSITY DISTRIBUTION

The following diagrams show the polar light intensity distribution of the lamp.



GE Lighting

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