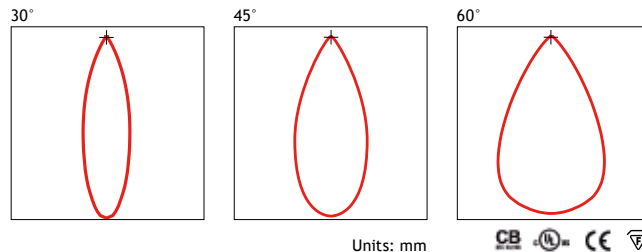




Highly directive light from a smart, shapely luminaire. Stage the lighting any way you want, exactly the way you want it. Twirl the heads up, down and all around, then fix in place with millimetre precision. Choose one, two or three illuminating heads as standard. Choose to customise with more. Choose uniform or combined beam angles. Choose the height. Combine illuminating heads, beam angles and dimming to get precisely the light intensity you need. High colour rendering in all colour spectra ensures superior white light and true colour reproduction. Recessed LEDs strictly limit glare. Ideal for object illumination in showcases, in niches, free-standing and surface-mounted. Libra: flexible illumination that really turns heads.

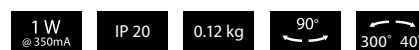
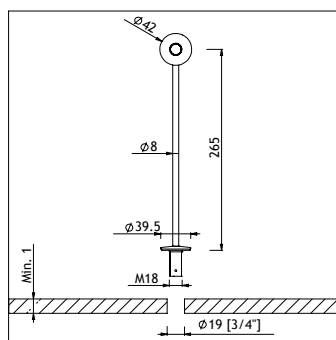
Libra

For indoor use
 Free-standing or surface-mounted vertically or horizontally
 Individually directive heads
 Surface-mounted with nut or screws
 Anodised aluminium, POM, ABS
 Beam angle 30°, 45° or 60°
 Beam angles can be combined
 Individual reflectors can be changed
 LEDs can be replaced
 CRI typical value 90
 Luminous flux typical values 50 and 150 lm
 Fixture efficacy typical value 50 lm/W



Libra 1

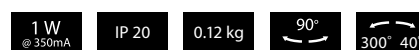
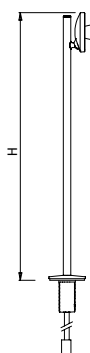
1 watt
 Beam angle 30° or 60°



		Item no.	
		3,000 K	4,500 K
Black	30°	1127 1010	1127 4010
	60°	1127 1210	1127 4210
Grey	30°	1127 1020	1127 4020
	60°	1127 1220	1127 4220
Bronze	30°	1127 1071	1127 4071
	60°	1127 1271	1127 4271

Libra 1 Custom

1 watt
 Centre of head 21 mm from top
 Height min. 75 mm, max. 700 mm



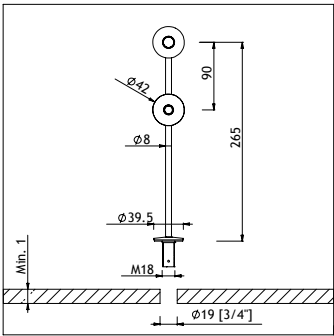
		Item no.	
		3,000 K	4,500 K
Black	30°	1123 2110	1123 4110
	60°	1123 2120	1123 4210
Grey	30°	1123 2020	1123 4020
	60°	1123 2220	1123 4220
Bronze	30°	1123 2071	1123 4071
	60°	1123 2271	1123 4271

Specify when ordering
 3,000 or 4,500 K
 Head 30°, 45° or 60°
 Height (H)

Libra

Libra 2

2 watt
Top head beam angle 30°
Bottom head beam angle 60°



2 W
@ 350mA

IP 20

0.13 kg

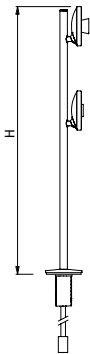
90°

300° 40°

	Item no.	
	3,000 K	4,500 K
Black	1127 2210	1127 5210
Grey	1127 2220	1127 5220
Bronze	1127 2271	1127 5271

Libra 2 Custom

2 watt
Centre of head 21 mm from top
Centre of head min. 54 mm from surface
Height min. 75 mm, max. 700 mm



2 W
@ 350mA

IP 20

0.13 kg

90°

300° 40°

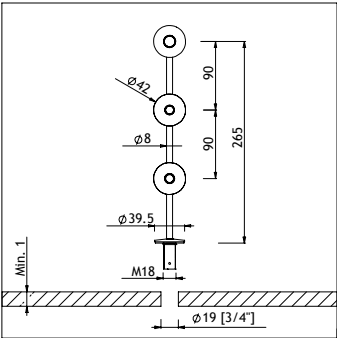
	Item no.	
Black	1123 2210	
Grey	1123 2220	
Bronze	1123 2271	

Specify when ordering
3,000 or 4,500 K
Top head 30°, 45° or 60°
Bottom head 30°, 45° or 60°
Height (H)

Libra

Libra 3

3 watt
Top head beam angle 30°
Middle head beam angle 45°
Bottom head beam angle 60°



3 W
@ 350mA

IP 20

0.15 kg

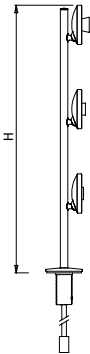
90°

300° 40°

	Item no.	
	3,000 K	4,500 K
Black	1127 3410	1127 6410
Grey	1127 3420	1127 6420
Bronze	1127 3471	1127 6471

Libra 3 Custom

3 watt
Centre of head 21 mm from top
Centre of head to centre of next head min. 90 mm.
Centre of head min. 54 mm from surface
Height min. 75 mm, max. 700 mm



3 W
@ 350mA

IP 20

0.15 kg

90°

300° 40°

	Item no.
Black	1123 2310
Grey	1123 2320
Bronze	1123 2371

Specify when ordering
3,000 or 4,500 K
Top head 30°, 45° or 60°
Middle head 30°, 45° or 60°
Bottom head 30°, 45° or 60°
Height (H)

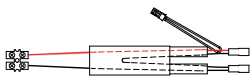


Item no.		
Reflector b medium 30	Black	1126 0310
	Grey	1126 0320
	Bronze	1126 0371
Reflector b medium 45	Black	1126 0410
	Grey	1126 0420
	Bronze	1126 0471
Reflector b wide 60	Black	1126 0610
	Grey	1126 0620
	Bronze	1126 0671



Item no.		
	3,000 K	4,500 K
1-LED spare module 1a	1129 5130	1129 5145

Serial no. on wire label identifies flux and colour bin.
Quote when ordering.



	Connections	Jumpers	Item no.
Serial splitter	2	1	1108 0012
	4	2	1108 0014
	8	4	1108 0018

Jumper wires included

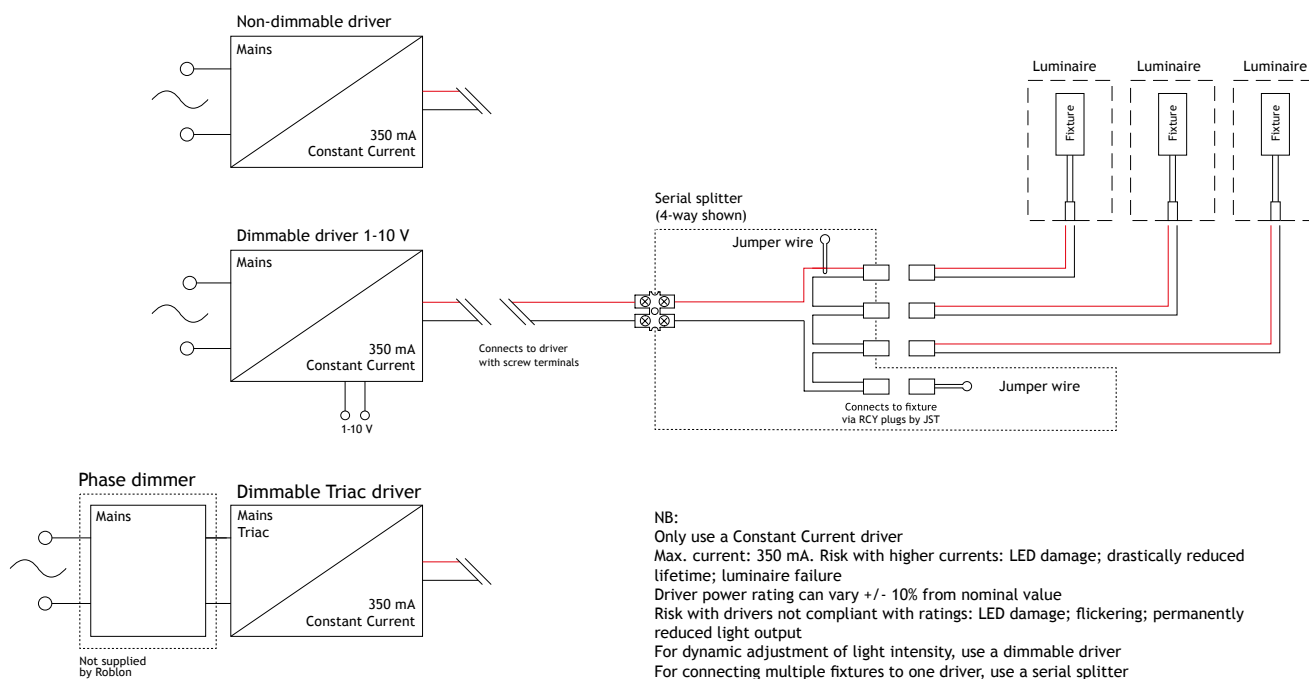
Libra drivers

Full, current driver product range, data and selection guidelines available at www.roblonlighting.com

Driver types

Dimming	No. of LEDs	Power rating	Voltage	Item no.
None	1-8	10	120-240 AC	1100 0101
1-10 V	1-7	9	200-240 AC	1103 2104
Phase control	4-12	18	120 AC	1103 1181

Driver wiring guide



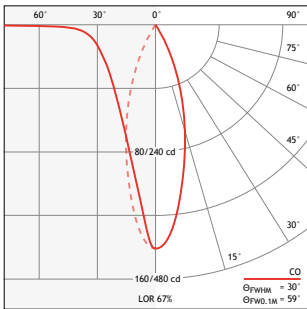
Libra fundamentals

Full, current photometric data and product documentation available at www.roblonlighting.com

CCT (nominal)	3,000	4,500	K
CRI ₈ (Ra)	90	95	
UV-A, 320-400 nm	< 1	< 1	µW/lm
UV-B, 280-320 nm	< 1	< 1	µW/lm
Medium 30	Beam angle	30	30 °
	Luminous flux	45	50 lm/head
Medium 45	Beam angle	44	44 °
	Luminous flux	46	50 lm/head
Wide 60	Beam angle	59	59 °
	Luminous flux	48	53 lm/head
LED efficacy	63	71	lm/W
Fixture efficacy	42 - 45	48 - 51	lm/W
Luminaire efficacy*	18 - 38	20 - 41	lm/W

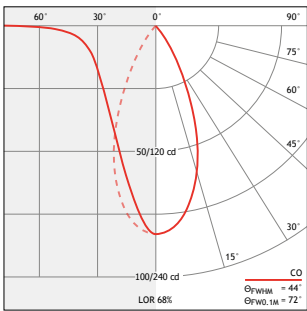
*Luminaire includes external driver. Luminaire efficacy depends greatly on system configuration. See www.roblonlighting.com

Medium 30



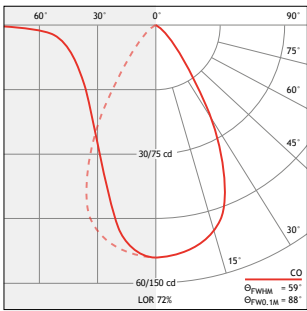
h [m]	Avg. E [lux]	Max. E [lux]	D _{FWHM} [m]	D _{FW0.1M} [m]
0.25	1,700	2,200	0.14	0.30
0.5	420	550	0.28	0.59
1.0	110	140	0.53	1.1
1.5	48	62	0.79	1.7
h	109/h ²	139/h ²	0.53·h	1.1·h

Medium 45



h [m]	Avg. E [lux]	Max. E [lux]	D _{FWHM} [m]	D _{FW0.1M} [m]
0.25	1,110	1,420	0.19	0.35
0.5	269	340	0.39	0.70
1.0	64	80	0.80	1.4
1.5	28	36	1.2	2.2
h	64/h ²	80/h ²	0.80·h	1.4·h

Wide 60



h [m]	Avg. E [lux]	Max. E [lux]	D _{FWHM} [m]	D _{FW0.1M} [m]
0.25	700	870	0.29	0.49
0.5	170	210	0.58	0.97
1.0	45	55	1.1	1.9
1.5	19	25	1.7	2.9
h	45/h ²	55/h ²	1.1·h	1.9·h

θ_{FWHM} is the full-width beam angle where intensity is half the maximum level.
θ_{FW0.1M} is the full-width beam angle where intensity is a tenth of the maximum level.
This is a non-standard measurement that is close to the perceived beam angle.

Illuminance values account for distances (h) greater than 100 mm. The photometric performance was measured at thermal steady state in 22 °C ambient temperature using 4,500 K LEDs driven at 350 mA. Multiply results by 0.93 to get according values for 3,000 K. If the luminaire is dimmed, scale the results in accordance with dimming performance.

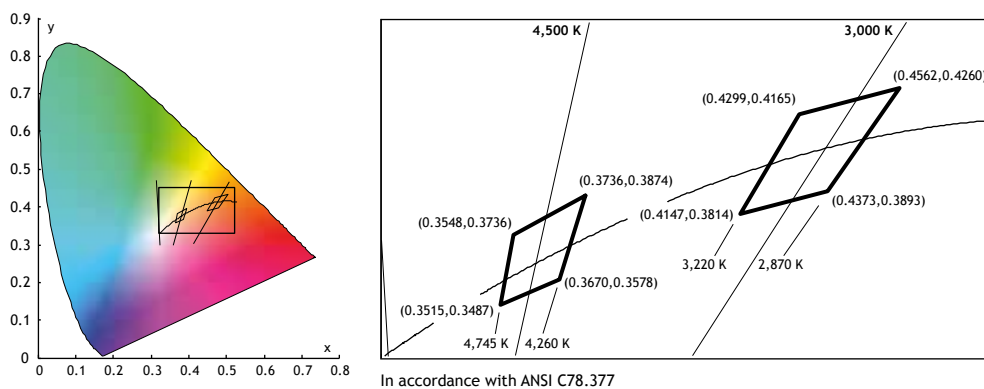
Libra fundamentals

Full, current photometric data and product documentation available at www.roblonlighting.com

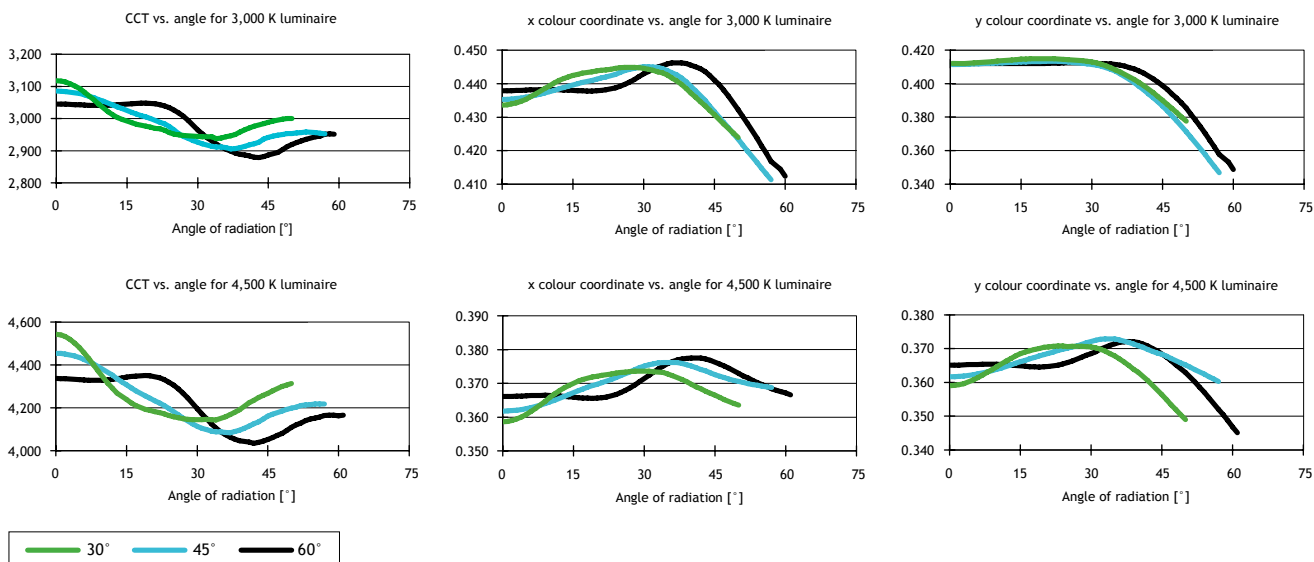
		3,000 K		4,500 K	
		Luminaire ¹	LED	Luminaire ¹	LED
CRI 01	Light greyish red	90	91	96	97
CRI 02	Dark greyish yellow	92	92	97	97
CRI 03	Strong yellow green	93	93	95	95
CRI 04	Moderate yellowish green	91	92	96	96
CRI 05	Light bluish green	89	89	95	95
CRI 06	Light blue	89	89	93	93
CRI 07	Light violet	94	94	97	97
CRI 08	Light reddish purple	83	84	94	94
CRI 09	Strong red	59	61	84	85
CRI 10	Strong yellow	81	81	91	92
CRI 11	Strong green	90	91	95	96
CRI 12	Strong blue	72	72	69	70
CRI 13	Light yellowish pink (skin)	90	91	97	98
CRI 14	Moderate olive green (leaf)	96	95	97	97
CRI _s (Ra)	Average level of CRI 01-08 ²	90	91	95	96
CRI ₁₄	Average level of CRI 01-14	86	87	93	93

1) All 3 reflector types perform consistently 2) In accordance with CIE 13.3:1995

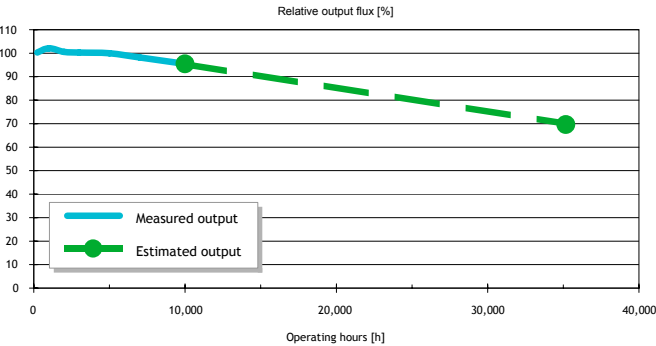
LED chromaticity and CCT



Luminaire chromaticity and CCT uniformity



Expected lifetime



Expected output depreciation at 45°C ambient. Plots are based on the LED manufacturer's ongoing end-of-life tests after 10,000 hours. The 35,000-hour lifetime (L70) is accepted in accordance with IESNA LM 80-08 if the lumen maintenance is minimum 94.1% after 6,000 hours of operation. The LED manufacturer's measurements show that the actual level is minimum 98.5%.

Lifetime is defined as the number of operating hours when lumen output reaches 70% of the initial level. The LEDs are designed to last minimum 35,000 hours with ambient temperature at 45°C.

Electrical driver mode	Constant Current
Fixture input current	Max. 350 mA
Applied LED	Nichia NS6x083y-H1
Power per head @ 350 mA	1.1 W
Luminaire* power consumption @ 350 mA	3 - 5 W
Plug type	RCY by JST

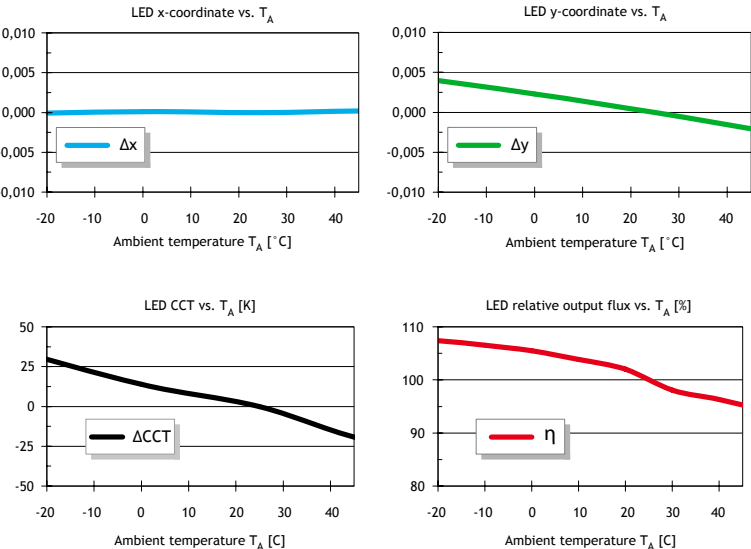
*Luminaire includes external driver. Luminaire efficacy depends greatly on system configuration.

Operating ambient temperature (T_A)	-20 to +45°C
Surface temperature increment (ΔT_{cA})	Max. 30°C
Surface temperature (T_c)	Max. 75°C
Temperature Measurement Point reading (TMP)	Max. 75°C
LED junction temperature increment (ΔT_{JA})	Max. 45°C
LED junction temperature (T_J)	Max. 90°C
Max. permitted operating LED junction temperature (LED manufacturer data)	Max. 120°C
Internal temperature protection type	None
Internal temperature protection threshold	-
Luminous intensity level when temperature protection is activated	-

The TMP is at the centre of the back of the head. Temperature readings are for installations where the distance from the heads to any object or surface is minimum 25 mm.

Example: A luminaire is driven at 350 mA (100% light output). If ambient temperature is 25°C, the surface temperature at TMP is max. 25 + 30 = 55°C and the LED junction temperature is max. 25 + 45 = 70°C at thermal steady state.

Temperature vs. light output



Protection circuits

The LED modules are designed to be immune to inverted polarity from the low-voltage driver. The modules are not protected against high voltage, e.g. mains power.

The LED modules comply with radio interference suppression and electromagnetic compatibility regulations (EMC) EN 55.015, EN 61.000-3-2, EN 61.547 and FCC part 15.

