

PHILIPS LIGHTOLIER

Downlighting

Calculite LED gen 3

4" round and square retrofit,
500 - 2500lm



Project: _____
 Location: _____
 Cat.No: _____
 Type: _____
 Lamps: _____ Qty: _____
 Notes: _____

Calculite LED generation 3 retrofit kits are designed to quickly convert installed Calculite compact fluorescent, incandescent and former generations of LED Downlights to the newest LED technology.

Complete conversion kit = Engine + Trim

Engine

example: C4L15835WZ10UR

Series	Lumens	CRI	CCT	Beam	Dimming	Voltage	Voltage
C4L						<input type="checkbox"/>	<input type="checkbox"/>
C4L Calculite LED 4" aperture	05 500lm	8 80CRI	27 2700K	N Narrow (43°) M Medium (56°) W Wide (76°)	Z10 0-10V 1% E ELV (120V dimming only)	U Universal 120/277/347V	R Retrofit RH Retrofit for tall collar frame ¹
	10 1000lm		30 3000K				
	15 1500lm		35 3500K				
	20 2000lm		40 4000K				
	25 2500lm						

Trim

example: C4RDLCPP

Series	Aperture	Style	Finish	Flange
C4	<input type="checkbox"/>	<input type="checkbox"/>		
C4 Calculite LED 4" aperture	R Round	DL Downlight	BK Black (matte) CC Comfort clear	- White (matte) P Polished
			CL Specular clear CD Comfort clear diffuse	
			CZ Champagne bronze	
		WH White (matte)	- White (matte)	
		WW Wall wash	BK Black (matte) CC Comfort clear	- White (matte) P Polished
			CL Specular clear CD Comfort clear diffuse	
	CZ Champagne bronze			
	WH White (matte)	- White (matte)		
	S Square	DLW Downlight (wide beam)	BK Black (matte) CC Comfort clear	- White (matte) P Polished
			CL Specular clear CD Comfort clear diffuse	
			CZ Champagne bronze	
		WH White (matte)	- White (matte)	
WW Wall wash		BK Black (matte) CC Comfort clear	- White (matte) P Polished	
		CL Specular clear CD Comfort clear diffuse		
	CZ Champagne bronze			
WH White (matte)	- White (matte)			

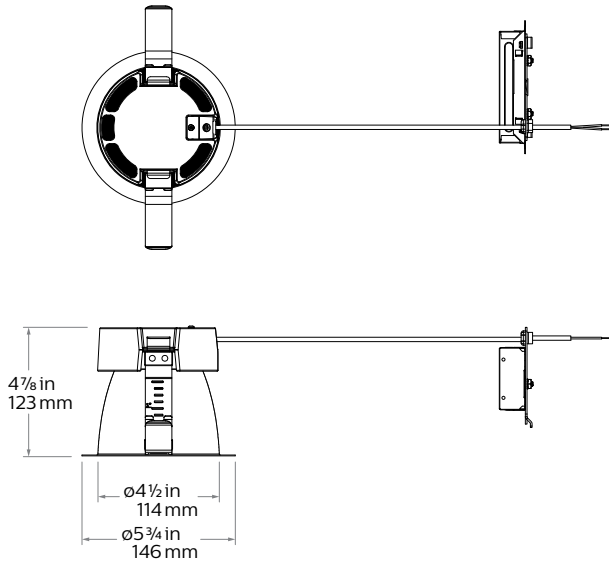
1. See page 2 for different frame collar heights to retrofit.



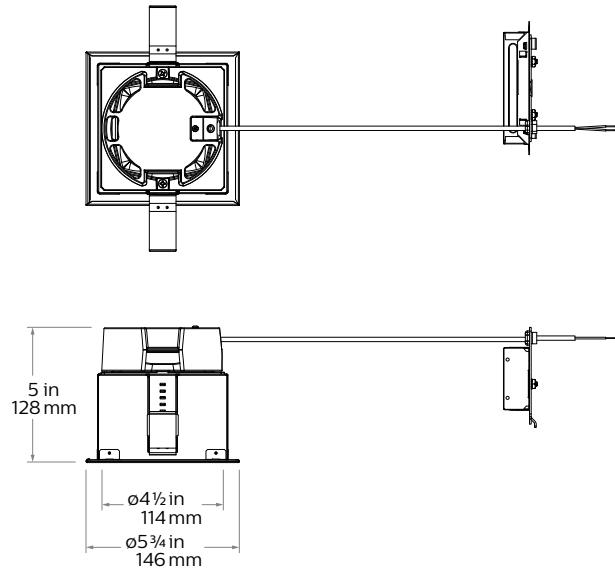
C4L Calculite LED generation 3

4" round and square retrofit

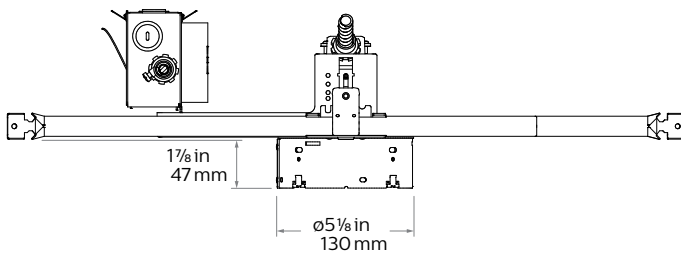
Retrofit (R) with round trim



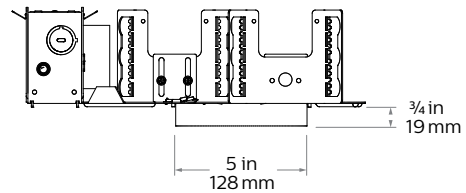
Retrofit (R) with square trim



Tall collar frame (RH type light engine required)



Standard steel frame (R type light engine required)



Medium/Wide

Light engine	Input volts	Input freq	Input current	Drive current	Input power	LED power	THD power	Power factor
C6L10_MZ10U	120V	50/60Hz	0.08	210 mA	9W	8W	<15%	>0.95
	277V		0.04				<20%	>0.95
C6L15_MZ10U	120V	50/60Hz	0.11	320 mA	15W	11W	<10%	>0.95
	277V		0.05				<15%	>0.95
C6L20_MZ10U	120V	50/60Hz	0.15	430 mA	19W	15W	<10%	>0.95
	277V		0.07				<15%	>0.95
C6L25_MZ10U	120V	50/60Hz	0.19	550 mA	23W	19W	<10%	>0.95
	277V		0.09				<15%	>0.95

Lifetime (TM-21) data

Lumens	Narrow beam	Medium/Wide beam*
1000lm 1500lm 2000lm 2500lm	L90 @ 60,000hrs.	L90 @ 60,000hrs.

C4L Calculite LED generation 3

4" round and square retrofit

Reflector



Specular clear (CL): Most specular and most efficient finish, delivers maximum photometric performance but can produce a mirror image effect of the interior space.



Comfort clear (CC): Semi-specular finish that softens the light at the source of the reflector and creates a subtle, even luminance from the reflector cone.



Comfort clear diffuse (CD): Slightly diffuse clear finish, that eliminates iridescence and reduces the mirror image effect inherent with specular finishes.



Champagne bronze (CZ): Semi-specular finish that softens light at the source of the reflector while providing a warmer reflector appearance (slightly warmer).



White (WH): (matte) Brightest illuminated aperture and provides the smoothest transition to most ceilings when off (white is only available with a white flange).



Black (BK): (matte) Specular finish that provides the lowest aperture brightness possible and significantly reduces source identification in a ceiling.

Flange



White (-): (matte) Provides the smoothest transition to ceilings when off.



Polished (P): (matches aperture) Produces a continuous look throughout the reflector (aperture matching).



Flangeless (F): (flush-mount) Creates a flush, virtually seamless transition from aperture to ceiling.

Compatibility

Frames

With CFL:
S4118_series

With INC:
AS400_series

With LED:
C4L_N series
C4X4L_N series
P4RD_N_series

Engines

Use Retrofit configuration:
C4R_Trim + C4L_Engine

Use Retrofit configuration:
C4R_Trim + C4L_Engine

Use Retrofit configuration:
C4R_Trim + C4L_Engine
C4S_Trim + C4L_Engine
C4R_Trim + C4L_Engine

* Not available for retrofitting luminaires with integral emergency battery.

Drivers

- Advance 0-10V 1% dimming
- ELV dimming

Optical systems

Comfort throughout the space:

Patented optical system combines primary and secondary optics to provide a true 50° physical cutoff and 45° reflected cutoff virtually eliminating the view of the light source and bright spots in the reflector. A new reflector curve reduces reflector brightness by up to 50% compared to existing products, allowing for the use of higher lumen packages in smaller apertures without creating bright spots in the ceiling.

Quality of light: 2 SDCM ensures color consistency from fixture to fixture and over the luminaire's long lifetime. Proprietary optical grade silicone lens with patterned surface provides soft, even beam diffusion without hotspots or dark rings.

ENERGY STAR® exceptions

Champagne Bronze and Black finishes

Labels and Listings

cULus listed for wet location

ENERGY STAR®

IBEW Union made (light engines & reflectors)

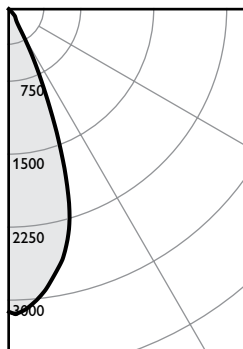
Warranty

5 year warranty on complete system.

Complete warranty available at: http://images.philips.com/is/content/PhilipsConsumer/PDFDownloads/United%20States/ODLI20150930_003-UPD-en_US-Philips-warranty-indoor-PLS-us.pdf

Narrow beam, 1500lm Engine, 103.8 lm/W at 14.7W or 112.2 lm/W at 13.6W (Power over Ethernet)

Candela Curve



Frame: **C4RN**
Engine: **C4L15835NZ10U**
Trim: **C4RDLCL**

Output lumens: 1526 lms
Input watts: 14.7 W
CRI: 80 min
CCT: 3500K
Spacing Crit.: 0.6
Beam Angle: 43°

Zonal summary

Zone	Lumens	%Luminaire
0-30	1354	88.7%
0-40	1469	96.3%
0-60	1526	100.0%
0-90	1526	100.0%

Angle	Mean CP	Lumens
0	3112	
5	3044	282
10	2785	
15	2410	652
20	1672	
25	837	420
30	324	
35	163	115
40	128	
45	77	57
50	0	
55	0	0
60	0	
65	0	0
70	0	
75	0	0
80	0	
85	0	0
90	0	

Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	124	3.0'
6'	86	3.6'
7'	64	4.2'
8'	49	4.8'
9'	38	5.4'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.
5'	71.3	0.65
6'	46.8	0.43
7'	33.4	0.31
8'	27.8	0.25
9'	22.3	0.20

38' x 38' x 10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Efficacy: 103.8 lm/w
Report#: T20161390

Adjustment factors

Finish	CCT	Lumens
CL = 100%	80CRI 4000K = 107%	3000lm = 200%
CC = 95%	80CRI 3500K = 100%	2500lm = 167%
CD = 87%	80CRI 3000K = 99%	2000lm = 133%
CZ = 63%	80CRI 2700K = 93%	1500lm = 100%
WH = 87%	90CRI 3000K = 87%	1000lm = 67%
BK = 57%	90CRI 2700K = 81%	500lm = 33%

Coefficients of utilization

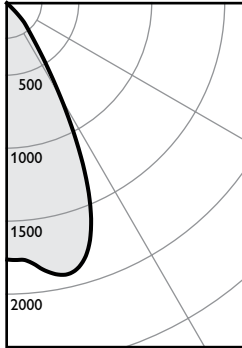
Room Cavity Ratio	Ceiling					Wall					RCR
	80%					70%					
	70	50	30	10	50	10	50	10	50	10	0
	Zonal cavity method - Effective floor reflectance = 20%										
0	119	119	119	119	116	116	111	111	106	106	100
1	114	112	110	108	110	106	106	103	102	100	95
2	110	106	102	99	104	98	101	96	98	94	91
3	105	100	96	92	99	92	96	90	94	89	86
4	101	95	90	87	94	86	92	85	90	84	82
5	97	90	85	82	89	81	88	81	86	80	78
6	93	86	81	77	85	77	84	77	83	76	74
7	90	82	77	74	81	73	80	73	79	73	71
8	86	79	74	70	78	70	77	70	76	69	68
9	83	75	70	67	75	67	74	67	73	66	65
10	80	72	67	64	72	64	71	64	70	64	62

C4L Calculite LED generation 3

4" round and square retrofit

Medium beam, 1500lm Engine, 114.6 lm/W at 14.2W or 121.4 lm/W at 13.4W (Power over Ethernet)

Candela Curve



Frame: **C4RN**
 Engine: **C4L15835MZ10U**
 Trim: **C4RDLCL**

Output lumens: 1627 lms
 Input watts: 14.2 W
 CRI: 80 min
 CCT¹: 3500K
 Spacing Crit.: 0.9
 Beam Angle: 56°

Zonal summary

Zone	Lumens	%Luminaire
0-30	1269	78.0%
0-40	1537	94.5%
0-60	1627	100.0%
0-90	1627	100.0%

Angle	Mean CP	Lumens
0	1760	
5	1783	174
10	1886	
15	1887	524
20	1702	
25	1283	572
30	762	
35	406	268
40	236	
45	116	89
50	14	
55	0	1
60	0	
65	0	0
70	0	
75	0	0
80	0	
85	0	0
90	0	

Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	70	4.5'
6'	49	5.4'
7'	36	6.3'
8'	28	7.2'
9'	22	8.1'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.
5'	74.8	0.63
6'	49.1	0.41
7'	35.0	0.30
8'	29.2	0.25
9'	23.4	0.20

38' x 38' x 10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Efficacy: 114.6 lm/w
 Report#: T20161397

Adjustment factors

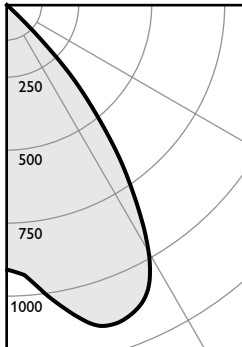
Finish	CCT	Lumens
CL = 100%	80CRI 4000K = 102%	3000lm = 200%
CC = 95%	80CRI 3500K = 100%	2500lm = 167%
CD = 87%	80CRI 3000K = 97%	2000lm = 133%
CZ = 63%	80CRI 2700K = 87%	1500lm = 100%
WH = 87%	90CRI 3000K = 77%	1000lm = 67%
BK = 57%	90CRI 2700K = 73%	500lm = 33%

Coefficients of utilization

Ceiling	80%					70%					50%					30%					0%
	70	50	30	10	50	10	50	10	50	10	50	10	50	10	50	10	50	10			
Wall	70	50	30	10	50	10	50	10	50	10	50	10	50	10	50	10	50	10	0		
RCR	Zonal cavity method - Effective floor reflectance = 20%																				
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100	100	106	106	100	100	94	94		
1	114	111	109	107	109	105	105	102	102	101	99	94	94	96	92	88	88	82	82		
2	108	104	100	97	102	96	96	94	94	96	94	88	88	91	87	81	81	74	72		
3	103	97	93	89	96	88	88	87	87	91	85	82	82	86	80	77	77	70	68		
4	98	91	86	82	90	81	81	81	81	86	80	77	77	81	74	72	70	68	64		
5	94	86	80	76	85	76	76	76	76	83	75	72	72	77	70	68	66	64	64		
6	89	81	75	71	80	71	71	71	71	79	70	68	68	73	66	64	64	64	64		
7	85	76	70	66	76	66	66	66	66	74	66	64	64	73	66	64	64	64	64		
8	81	72	66	62	71	62	62	62	62	70	62	60	60	69	62	60	60	60	60		
9	77	68	63	59	68	59	59	59	59	67	58	56	56	66	58	57	57	57	57		
10	74	65	59	55	64	55	55	55	55	63	55	53	53	63	55	54	54	54	54		

Wide beam, 1500lm Engine, 106.6 lm/W at 14.2W or 113.2 lm/W at 13.4W (Power over Ethernet)

Candela Curve



Frame: **C4RN**
 Engine: **C4L15835WZ10U**
 Trim: **C4RDLCL**

Output lumens: 1517 lms
 Input watts: 14.2 W
 CRI: 80 min
 CCT¹: 3500K
 Spacing Crit.: 1.2
 Beam Angle: 76°

Zonal summary

Zone	Lumens	%Luminaire
0-30	918	60.5%
0-40	1368	90.2%
0-60	1517	100.0%
0-90	1517	100.0%

Angle	Mean CP	Lumens
0	906	
5	945	93
10	1040	
15	1128	318
20	1153	
25	1114	506
30	978	
35	732	450
40	460	
45	175	148
50	18	
55	0	2
60	0	
65	0	0
70	0	
75	0	0
80	0	
85	0	0
90	0	

Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	36	6.0'
6'	25	7.2'
7'	18	8.4'
8'	14	9.6'
9'	11	10.8'

* Beam diameter is where foot-candles drop to 50% of maximum.

Multiple unit data - RCR 2

Spacing on center	Initial center beam foot-candles	Watts per sq. ft.
5'	68.5	0.63
6'	45.0	0.41
7'	32.1	0.30
8'	26.8	0.25
9'	21.4	0.20

38' x 38' x 10' Room, Workplane 2.5' above floor, 80/50/20% Reflectances

Efficacy: 106.6 lm/w
 Report#: T20161406

Adjustment factors

Finish	CCT	Lumens
CL = 100%	80CRI 4000K = 102%	3000lm = 200%
CC = 95%	80CRI 3500K = 100%	2500lm = 167%
CD = 87%	80CRI 3000K = 97%	2000lm = 133%
CZ = 63%	80CRI 2700K = 87%	1500lm = 100%
WH = 87%	90CRI 3000K = 77%	1000lm = 67%
BK = 57%	90CRI 2700K = 73%	500lm = 33%

Coefficients of utilization

Ceiling	80%					70%					50%					30%					0%
	70	50	30	10	50	10	50	10	50	10	50	10	50	10	50	10	50	10			
Wall	70	50	30	10	50	10	50	10	50	10	50	10	50	10	50	10	50	10	0		
RCR	Zonal cavity method - Effective floor reflectance = 20%																				
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100	100	106	106	100	100	93	93		
1	113	110	108	105	108	104	104	100	100	104	97	91	91	94	89	86	86	82	82		
2	107	102	98	94	100	93	93	91	91	94	89	86	86	91	84	81	81	74	72		
3	101	94	89	85	93	84	84	83	83	88	81	79	79	86	78	72	72	66	66		
4	96	87	82	77	86	77	77	77	77	84	76	72	72	81	74	72	70	68	66		
5	90	81	75	70	80	70	70	70	70	78	69	67	67	77	69	66	66	66	66		
6	85	75	69	64	75	64	64	64	64	73	64	62	62	73	63	61	61	61	61		
7	80	70	64	59	69	59	59	59	59	68	59	56	56	67	58	56	56	56	56		
8	76	65	59	55	65	54	54	54	54	64	54	52	52	63	54	52	52	52	52		
9	72	61	55	50	61	50	50	50	50	60	50	48	48	59	50	48	48	48	48		
10	68	57	51	47	57	47	47	47	47	56	47	45	45	55	46	45	45	45	45		

1. Correlated Color Temperature within specs as defined in ANSI_NEMA_ANSLG C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products.
 2. Tested using absolute photometry as specified in LM79: IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State Lighting Products.

