



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.

Project: \_\_\_\_\_

Location: \_\_\_\_\_

Cat.No: \_\_\_\_\_

Type: \_\_\_\_\_

Lamps: \_\_\_\_\_ Qty: \_\_\_\_\_

Notes: \_\_\_\_\_

Complete conversion kit = Engine + Trim

### Engine

example: C4L15835WZ10UR

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

### Trim

example: C4RDLCCP

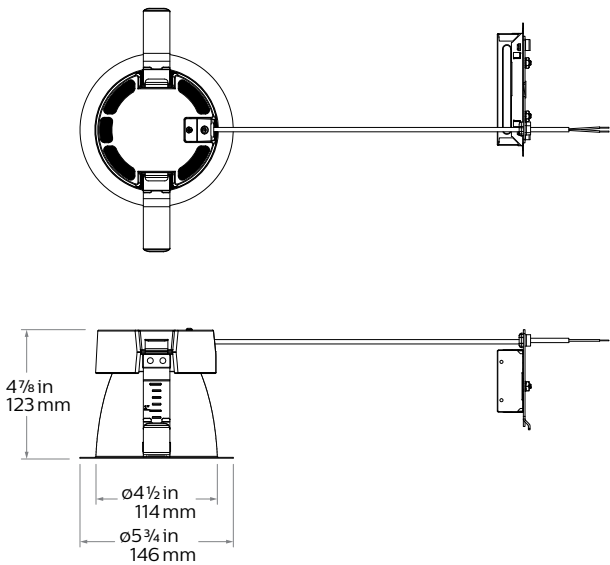
Series	Aperture	Style	Finish		Flange
<div>C4</div>	<div></div>	<div></div>			
C4    Calculite LED 4"	R    Round	DL    Downlight	BK    Black (matte)	CC    Comfort clear	–    White (matte)
			CL    Specular clear	CD    Comfort clear diffuse	P    Polished
			CZ    Champagne bronze		
		WH    White (matte)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

1. See page 2 for different round frame collar height details, use RH for tall collar frame or square frame.

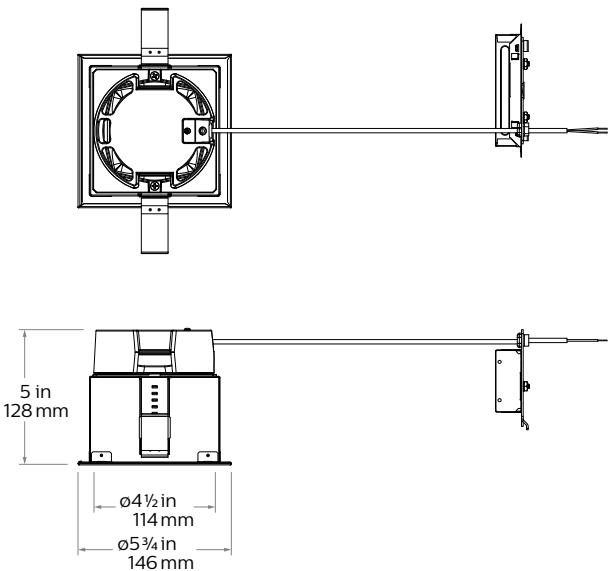
# C4L    Calculite LED 4" gen 3

## Round/Square Retrofit

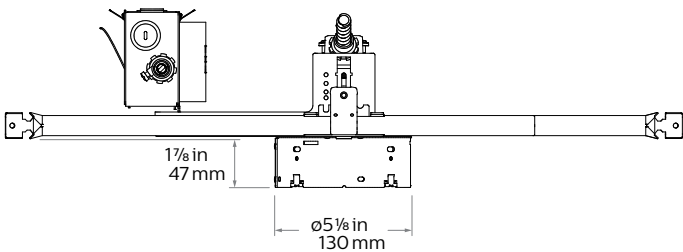
### Retrofit (R) with round trim



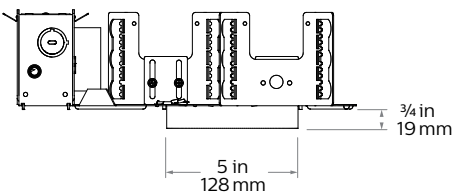
### Retrofit (R) with square trim



### Round tall collar frame (RH type light engine required)



### Round standard steel frame (R type light engine required)



### 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.

# C4L Calculite LED 4" gen 3

## Round/Square Retrofit

### 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 locations
- ENERGY STAR® certified
- 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](http://images.philips.com/is/content/PhilipsConsumer/PDFDownloads/United%20States/ODLI20150930_003-UPD-en_US-Philips-warranty-indoor-PLS-us.pdf)

### Medium/Wide

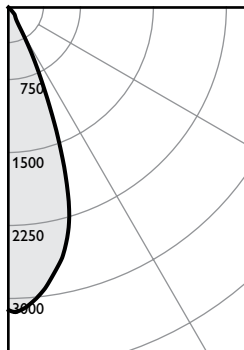
Light engine	Input volts	Input freq	Input current	Drive current	Input power	LED power	THD power	Power factor
<b>C6L10_MZ10U</b>	120V	50/60Hz	0.08	210 mA	9W	8W	<15%	>0.95
	277V		0.04				<20%	>0.95
<b>C6L15_MZ10U</b>	120V	50/60Hz	0.11	320 mA	15W	11W	<10%	>0.95
	277V		0.05				<15%	>0.95
<b>C6L20_MZ10U</b>	120V	50/60Hz	0.15	430 mA	19W	15W	<10%	>0.95
	277V		0.07				<15%	>0.95
<b>C6L25_MZ10U</b>	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*
<b>1000lm</b> <b>1500lm</b> <b>2000lm</b> <b>2500lm</b>	L90 @ 60,000hrs.	L90 @ 60,000hrs.

### 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: **C4RDLC**

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	282
5	3044	
10	2785	
15	2410	652
20	1672	
25	837	
30	324	420
35	163	
40	128	
45	77	57
50	0	
55	0	
60	0	0
65	0	
70	0	
75	0	0
80	0	
85	0	
90	0	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: 103.8lm/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

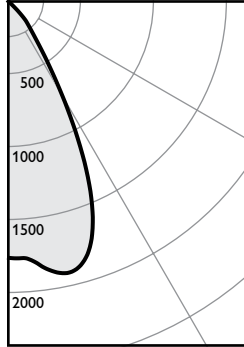
Ceiling	80%				70%		50%		30%		0%	
Wall	70	50	30	10	50	10	50	10	50	10	0	
RCR	Zonal cavity method - Effective floor reflectance = 20%											
Room Cavity Ratio	0	119	119	119	119	116	116	111	111	106	106	100
	1	114	112	110	108	110	106	106	103	102	100	95
	2	110	106	102	99	104	98	101	96	98	94	91
	3	105	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 4" gen 3

## Round/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  
CCT<sup>1</sup>: 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

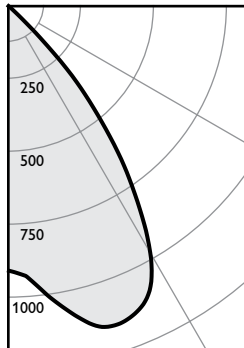
Finish	CCT	Lumens
CL = 100%	80CRI 4000K = 102%	3000lm = 200%
CC = 95%	80CRI 3500K = 100%	2500lm = 167%
CD = 87%	80CRI 3000K = 97%	2000lm = 133%
CZ = 63%	80CRI 2700K = 87%	1500lm = 100%
WH = 87%	90CRI 3000K = 77%	1000lm = 67%
BK = 57%	90CRI 2700K = 73%	500lm = 33%

### Coefficients of utilization

Ceiling	80%				70%		50%		30%		0%	
Wall	70	50	30	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
	1	114	111	109	107	109	105	105	102	101	99	94
	2	108	104	100	97	102	96	99	94	96	92	88
	3	103	97	93	89	96	88	93	87	91	85	82
	4	98	91	86	82	90	81	88	81	86	80	77
	5	94	86	80	76	85	76	83	75	81	74	72
	6	89	81	75	71	80	71	79	70	77	70	68
	7	85	76	70	66	76	66	74	66	73	66	64
	8	81	72	66	62	71	62	70	62	69	62	60
	9	77	68	63	59	68	59	67	58	66	58	57
10	74	65	59	55	64	55	63	55	63	55	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  
CCT<sup>1</sup>: 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%	
Wall	70	50	30	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
	1	113	110	108	105	108	104	104	100	100	97	93
	2	107	102	98	94	100	93	97	91	94	89	86
	3	101	94	89	85	93	84	90	83	88	81	79
	4	96	87	82	77	86	77	84	76	82	75	72
	5	90	81	75	70	80	70	78	69	77	69	66
	6	85	75	69	64	75	64	73	64	72	63	61
	7	80	70	64	59	69	59	68	59	67	58	56
	8	76	65	59	55	65	54	64	54	63	54	52
	9	72	61	55	50	61	50	60	50	59	50	48
10	68	57	51	47	57	47	56	47	55	46	45	

1. Correlated Color Temperature within specs as defined in ANSI\_NEMA\_ANSI 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.

