

PHILIPS LIGHTOLIER

Downlighting

Calculite LED gen 3

4" square downlight,
500-3000lm



Project: _____

Location: _____

Cat.No: _____

Type: _____

Lamps: _____ Qty: _____

Notes: _____

Calculite LED 4" generation 3 features industry leading visual comfort, excellent uniform illumination over time, and patented installation flexibility.

Complete luminaire = Frame + Engine + Trim + Accessories (optional)

Frame

example: C4SN

Series	Aperture	Installation	Voltage/Options
C4	S		
C4 Calculite LED 4" aperture	S Square	N New construction ¹ R Remodeler	— Universal 120V/277V (specify for Power Over Ethernet configurations) 3 347V (not compatible with ELV dimming) EM Emergency ^{1,2} LC Chicago Plenum ¹

Engine

example: C4L15835NZ10U

Series	Lumens	CRI	CCT	Beam ⁵	Dimming	Voltage
C4L						
C4L Calculite LED 4" aperture	05 500lm ³ 10 1000lm 15 1500lm 20 2000lm 25 2500lm ⁴ 30 3000lm ⁴	8 80 CRI 9 90 CRI	27 2700K 30 3000K 35 3500K 40 4000K	N Narrow (45°) M Medium (58°) and Wide (69°)	Z10 0-10V 1% ³ SOL EldoLED Solo 0-10V 0.1% D Dali L Lutron LDE1 EcoSystem (fade-to-black) E ELV (120V dimming only) ⁵ P Power over Ethernet (PoE) Only compatible with 1000 (10) to 2500 (25) lumen configurations.	U Universal 120V/277V/347V 1 Universal 120V/277V E Ethernet 48V DC

Trim

example: C4SDLNMCCP

Series	Aperture	Style	Beam ⁵	Finish	Flange
C4	S	DL			
C4 Calculite LED 4" aperture	S Square	DL Downlight	NM Narrow and Medium W Wide	CL Specular clear CC Comfort clear CD Comfort clear diffuse WH White (matte)	— White (matte) P Polished F Flangeless — White (matte) F Flangeless

Beam options

Trim	Narrow engine	Medium engine
Narrow & Medium	47° (0.7 s.c.)	63° (0.9 s.c.)
Wide	Not recommended	79° (1.2 s.c.)

Accessories

CA4SFT	Mud-in ring for use with flangeless installations (ordered with a flangeless trim)
CAEM	Field installable EM pack
AMS	ActiLume multi-sensor (optional accessory for Power Over Ethernet configurations)
SWZDT	SpaceWise wireless controller with dwell time functionality, compatible with all 0-10V configurations (for details see "SWZDT" spec sheet)

- Emergency (EM) and Chicago Plenum (LC) options are only available with New construction (N) installations.
- Emergency (EM) frame comes with emergency battery pack and ceiling mountable test switch. Reflector mounted test switch requires above ceiling access. For reflector mounted test switch, order emergency frame and add "EM" suffix to reflector (example: C4SDLCCEM).
- The 500lm (05) package is only compatible with 0-10V (Z10) dimming.
- The 2500lm (25), and 3000lm (30) packages have marked spacing requirements (see page 3).
- See Beam Options table to the left for light engine and trim combination spacing criterion.
- ELV (E) dimming is only compatible with up to 2000lm (20) configurations.

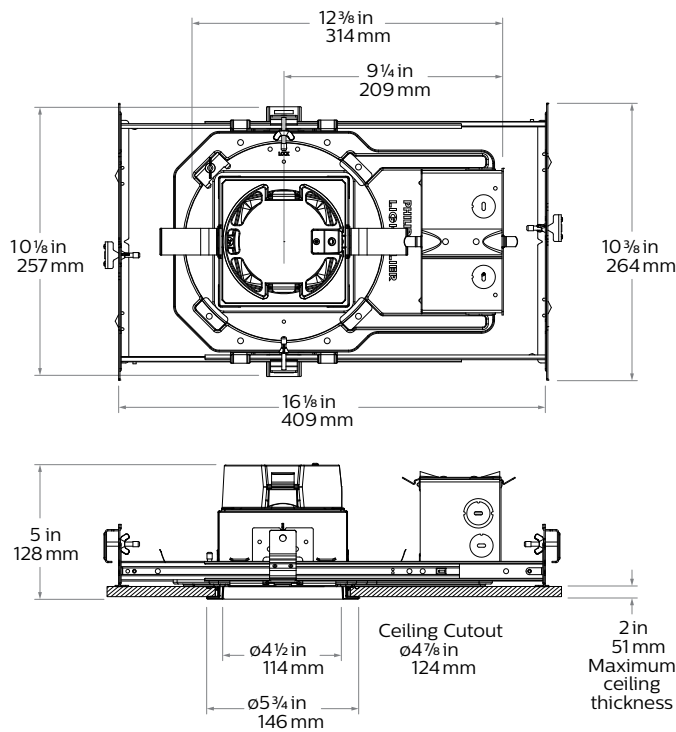
CalculiteLEDgen3_4in_Downlight_C4SDL



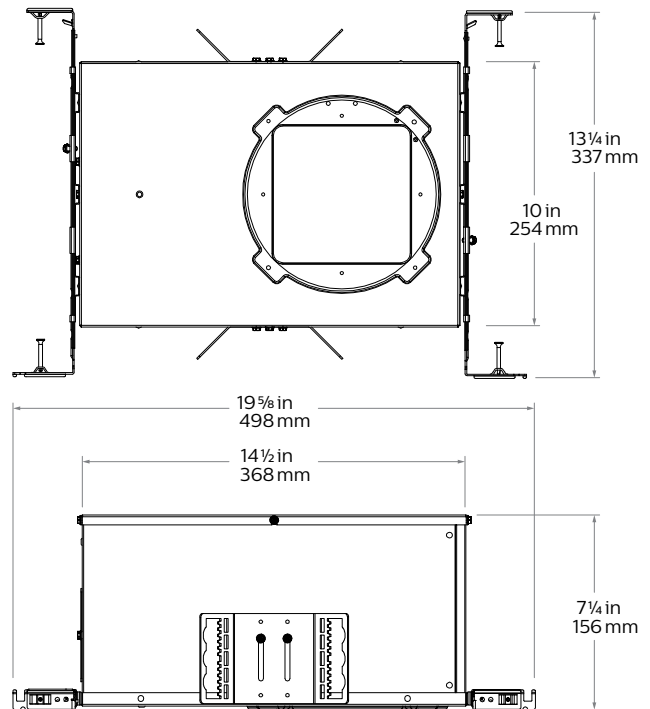
C4SDL Calculite LED generation 3

4" square downlight

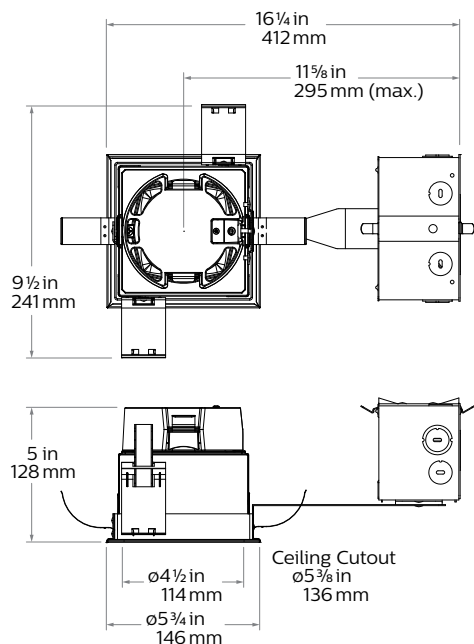
New Construction (N)



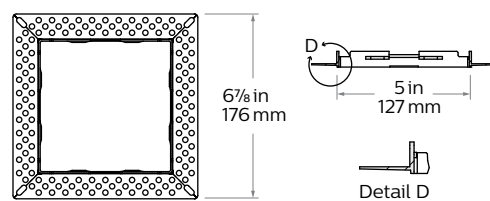
Chicago Plenum (LC)



Remodeler (R)

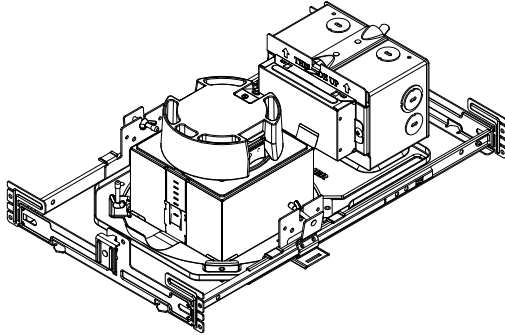


Flangeless mud-in ring (CA4SFT) accessory



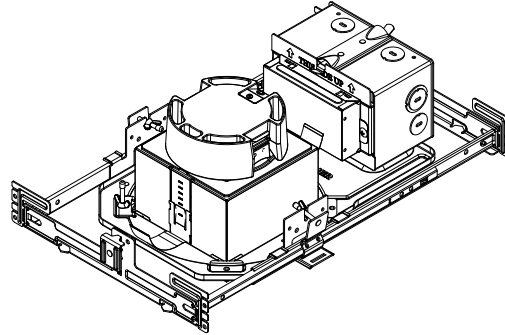
C4SDL Calculite LED generation 3

4" square downlight



Narrow

Light engine	Input volts	Input freq	Input current	Drive current	Input power	THD power	Power factor
C4L05_NZ10U	120V	50/60Hz	0.05	110 mA	6W	<20%	>0.95
	277V		0.03			<20%	>0.90
C4L10_NZ10U	120V	50/60Hz	0.08	230 mA	11W	<15%	>0.95
	277V		0.04			<20%	>0.95
C4L15_NZ10U	120V	50/60Hz	0.12	360 mA	16W	<10%	>0.95
	277V		0.06			<15%	>0.95
C4L20_NZ10U	120V	50/60Hz	0.17	490 mA	21W	<10%	>0.95
	277V		0.08			<15%	>0.95
C4L25_NZ10U	120V	50/60Hz	0.22	640 mA	27W	<10%	>0.95
	277V		0.10			<15%	>0.95
C4L30_NZ10U	120V	50/60Hz	0.27	790 mA	33W	<10%	>0.95
	277V		0.13			<15%	>0.95



Medium/Wide

Light engine	Input volts	Input freq	Input current	Drive current	Input power	THD power	Power factor
C4L05_MZ10U	120V	50/60Hz	0.05	110 mA	6W	<20%	>0.95
	277V		0.03			<20%	>0.90
C4L10_MZ10U	120V	50/60Hz	0.08	230 mA	11W	<15%	>0.95
	277V		0.04			<20%	>0.95
C4L15_MZ10U	120V	50/60Hz	0.12	350 mA	16W	<10%	>0.95
	277V		0.06			<15%	>0.95
C4L20_MZ10U	120V	50/60Hz	0.16	470 mA	21W	<10%	>0.95
	277V		0.08			<15%	>0.95
C4L25_MZ10U	120V	50/60Hz	0.21	610 mA	25W	<10%	>0.95
	277V		0.09			<15%	>0.95
C4L30_MZ10U	120V	50/60Hz	0.26	770 mA	31W	<10%	>0.95
	277V		0.12			<15%	>0.95

Narrow (Power over Ethernet)

Light engine	Input				
	Volts ¹	Voltage ²	Freq	Current	Power
C4L10___NPE	53V	51-54V	DC	160 mA	8.9 W
C4L15___NPE	53V	51-54V	DC	250 mA	13.6 W
C4L20___NPE	53V	51-54V	DC	340 mA	18.5 W
C4L25___NPE	53V	51-54V	DC	460 mA	24.6 W

1. Nominal input volts.
2. Preferred volt range.

Medium (Power over Ethernet)

Light engine	Input				
	Volts ¹	Voltage ²	Freq	Current	Power
C4L10___MPE	53V	51-54V	DC	160 mA	8.8 W
C4L15___MPE	53V	51-54V	DC	250 mA	13.4 W
C4L20___MPE	53V	51-54V	DC	320 mA	17.6 W
C4L25___MPE	53V	51-54V	DC	430 mA	23.2 W

Wide (Power over Ethernet)

Light engine	Input				
	Volts ¹	Voltage ²	Freq	Current	Power
C4L10___WPE	53V	51-54V	DC	160 mA	8.8 W
C4L15___WPE	53V	51-54V	DC	250 mA	13.4 W
C4L20___WPE	53V	51-54V	DC	320 mA	17.6 W
C4L25___WPE	53V	51-54V	DC	430 mA	23.2 W

Marked spacing applications

Light engine	2500lm	3000lm
C4L_Z10U series	—	X
C4L_LU series	X	X
C4L_DU series	—	X

Modules marked with an X require marked spacing:
- Center-to-center of adjacent luminaires: 24" (610mm)
- Luminaire center to side building member: 12" (305mm)

Lifetime (TM-21) data

Lumens	Narrow beam	Medium/Wide beam*
500lm 1000lm 1500lm	L90 @ 60,000 hrs.	L90 @ 60,000 hrs.
2000lm 2500lm 3000lm*	L90 @ 60,000hrs.	L85 @ 60,000hrs.

* Lutron 3000lm with Medium/Wide beam is L80 @ 60,000hrs.

C4SDL Calculite LED generation 3

4" square downlight

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.



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

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.

Frame-in-kits

New Construction

Galvanized stamped steel for dry or plaster ceilings. Preinstalled telescoping mounting bars from 13" to 24". For 4' distances, use 1/2" EMT, 1-1/2" x 1/2" U or C channel.

Max ceiling thickness is 2".

Including PoE frame 4.88" (124 mm).

Patented install Mounting frame

With no driver attached, this versatile frame is independent of driver accommodating a wide range of lumen packages, driver types and CCTs, including 120V and 277V inputs.

Pre-installed mounting bars allow for fast and tool-less installation into T-grid and hat channel ceilings.

Close-cut aperture design eliminates the possibility of undesired gap between ceiling opening and reflector flange.

Separate wiring compartment for wiring frame to building allows inspection prior to light engine installation.

Simple plug-and-play connection between the frame and light engine from below the ceiling eliminates the need for wiring between frame and LED driver, and also saves time during installation and future replacements/upgrades. Plug-and-play receptacle accommodates technology upgrade of light engines and replacements for the life of the building.

Features for easy alignment of fixtures and present locking at 0°, 45°, and 90°. 360° rotation with tool-less locking.

Drivers

- Advance 0-10V 1% dimming
- Lutron Hi-lume EcoSystem H Series 1% dimming
- EldoLED ECOdrive Dali 1% dimming
- EldoLED SOLOdrive 0-10V 0.1% dimming
- ELV dimming

Power over Ethernet

Powered via Philips PoE lighting controller: complies with FCC rules per Title 47 part 15 (Class A) for EMI / RFI (conducted & radiated). PoE lighting controller accessible from below ceiling.

Rated life: 60,000 hrs at 70% lumen maintenance based on IES LM-80-08 and TM-21-11.

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.

Light Engine

Quick connect power pack comprised of light source and driver allow for easy installation and replacement from below ceiling with no need for additional wiring. This allows for

- Frame and ceiling installation to be performed while still finalizing details such as lumen packages, CCT and control type.
- Easy replacement of electronics at end of life with minimal wasted material and labor required.
- Ease and upgradability of technology.

Options and Accessories

Flangeless mud-in ring: Use **CA4SFT** for use with flangeless plaster installations.

ENERGY STAR® exceptions

500lm & 90 CRI configurations
Champagne Bronze and Black finishes
347V & Emergency voltage/options
Dali, EldoLED Solo & PoE drivers

Title 24 exceptions

1000lm configurations
Champagne Bronze and Black finishes

Labels and Listings

cULus listed for wet location
ENERGY STAR®, RoHS & CEC Title 24 JA8 certified
CCEA (frames with *LC suffix)
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

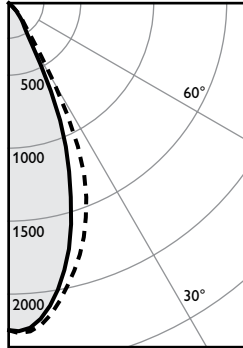


C4SDL Calculite LED generation 3

4" square downlight

Narrow beam, 1500lm Engine, 93.0 lm/w at 14.7W or 100.6 lm/W at 13.6W (Power over Ethernet)

Candela Curve



Frame: **C4SN**
Engine: **C4L15835NZ10U**
Trim: **C4SDLNMCL**

CCT¹: 3500K
Output lumens: 1369 lms
Input watts: 14.7 W (±5%)
CRI: 80 min
Spacing Crit.: 0.7
Beam Angle: 45°

Zonal summary

Zone	Lumens	%Luminaire
0-30	1142	83.4%
0-40	1311	95.7%
0-60	1369	100.0%
0-90	1369	100.0%

Angle	0°	45°	Lms
0	2242	2242	
5	2206	2238	
10	1995	2072	
15	1661	1845	
20	1234	1568	
25	783	1196	
30	334	637	
35	197	264	
40	132	156	
45	73	87	
50	0	0	
55	0	0	
60	0	0	
65	0	0	
70	0	0	
75	0	0	
80	0	0	
85	0	0	
90	0	0	

Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	90	3.5'
6'	62	4.2'
7'	46	4.9'
8'	35	5.6'
9'	28	6.3'

* 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'	63.4	0.65
6'	41.6	0.43
7'	29.7	0.31
8'	24.8	0.25
9'	19.8	0.20

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

Efficacy: 93.0 lm/w
Report#: T20161391

Adjustment factors

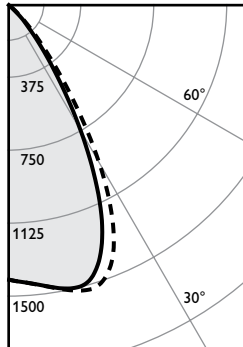
Finish	CCT	Lumens
CL = 100%	80CRI 4000K = 107%	3000lm = 200%
CC = 95%	80CRI 3500K = 100%	2500lm = 167%
CD = 87%	80CRI 3000K = 99%	2000lm = 133%
CZ = 63%	80CRI 2700K = 93%	1500lm = 100%
WH = 87%	90CRI 3000K = 87%	1000lm = 67%
BK = 57%	90CRI 2700K = 81%	500lm = 33%

Coefficients of utilization

Ceiling	80%				70%				50%				30%				0%
Wall	70	50	30	10	50	10	50	10	50	10	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
1	114	112	109	107	109	106	105	102	102	99	99	95	95	97	93	89	89
2	109	105	101	98	103	97	100	95	97	93	89	85	84	91	87	83	83
3	104	99	94	91	97	90	95	88	92	87	84	80	77	86	82	78	78
4	100	93	88	84	92	84	90	83	88	82	80	75	72	82	78	74	74
5	95	88	83	79	87	79	85	78	84	77	75	71	68	78	74	70	70
6	91	83	78	74	83	74	81	73	80	73	71	67	64	75	71	67	67
7	87	79	74	70	78	70	77	69	76	69	67	64	61	72	68	64	64
8	84	75	70	66	75	66	74	66	73	66	64	61	58	69	65	61	61
9	80	72	66	63	71	63	70	62	69	62	60	57	54	65	61	57	57
10	77	68	63	60	68	60	67	59	66	59	57	54	51	62	58	54	54

Medium beam, 1500lm Engine, 103.8 lm/w at 14.2W or 110.1 lm/W at 13.4W (Power over Ethernet)

Candela Curve



Frame: **C4SN**
Engine: **C4L15835MZ10U**
Trim: **C4SDLNMCL**

CCT¹: 3500K
Output lumens: 1475 lms
Input watts: 14.2 W (±5%)
CRI: 80 min
Spacing Crit.: 0.9
Beam Angle: 58°

Zonal summary

Zone	Lumens	%Luminaire
0-30	1092	74.0%
0-40	1393	94.5%
0-60	1475	100.0%
0-90	1475	100.0%

Angle	0°	45°	Lms
0	1414	1414	
5	1442	1442	
10	1481	1484	
15	1494	1522	
20	1387	1485	
25	1119	1287	
30	755	943	
35	430	561	
40	217	285	
45	100	129	
50	0	0	
55	0	0	
60	0	0	
65	0	0	
70	0	0	
75	0	0	
80	0	0	
85	0	0	
90	0	0	

Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	57	4.5'
6'	39	5.4'
7'	29	6.3'
8'	22	7.2'
9'	17	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'	67.5	0.63
6'	44.3	0.41
7'	31.6	0.30
8'	26.4	0.25
9'	21.1	0.20

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

Efficacy: 103.8 lm/w
Report#: T20161398

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	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
1	114	111	109	106	109	105	105	101	101	98	98	94	91	99	95	91	91
2	108	103	99	96	102	95	98	93	96	91	87	83	80	93	89	85	85
3	103	97	92	88	95	87	93	86	90	84	82	79	76	88	84	80	80
4	98	90	85	81	89	80	87	79	85	78	76	73	70	83	79	75	75
5	93	85	79	75	84	74	82	74	80	73	71	68	65	78	74	70	70
6	88	79	74	69	79	69	77	69	76	68	66	63	60	72	68	64	64
7	84	75	69	65	74	64	73	64	72	64	62	59	56	68	64	60	60
8	80	70	64	60	70	60	69	60	68	60	58	55	52	64	60	56	56
9	76	66	61	57	66	57	65	56	64	56	54	51	48	60	56	52	52
10	72	63	57	53	62	53	62	53	61	53	51	48	45	56	52	48	48

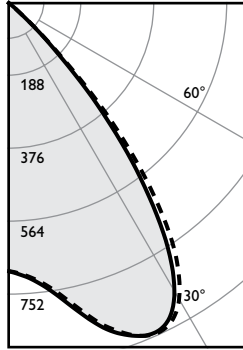
1. Correlated Color Temperature within specs as defined in ANSI_NEMA_ANSLG C78.377-2008: Specifications for the Chromaticity of Solid State Lighting Products.
2. Tested using absolute photometry as specified in LM79: IESNA Approved Method for the Electrical and Photometric Measurements of Solid-State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

C4SDL Calculite LED generation 3

4" square downlight

Wide beam, 1500lm Engine, 90.8 lm/w at 14.2W or 96.1 lm/W at 13.4W (Power over Ethernet)

Candela Curve



Frame: **C4SN**
Engine: **C4L15835MZ10U**
Trim: **C4SDLWCL**
CCT¹: 3500K
Output lumens: 1288 lms
Input watts: 14.2 W (±5%)
CRI: 80 min
Spacing Crit.: 1.2
Beam Angle: 69°

Zonal summary

Zone	Lumens	%Luminaire
0-30	725	56.3%
0-40	1141	88.6%
0-60	1288	100.0%
0-90	1288	100.0%

Angle	0°	45°	Lms
0	688	688	
5	713	709	69
10	766	757	
15	846	837	237
20	907	904	
25	923	928	419
30	854	878	
35	666	720	416
40	410	466	
45	163	181	146
50	28	27	
55	0	0	1
60	0	0	
65	0	0	0
70	0	0	
75	0	0	0
80	0	0	
85	0	0	0
90	0	0	

Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	28	6.0'
6'	19	7.2'
7'	14	8.4'
8'	11	9.6'
9'	8	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'	57.9	0.63
6'	38.0	0.41
7'	27.1	0.29
8'	22.6	0.25
9'	18.1	0.20

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

Efficacy: 90.8 lm/w
Report#: T20161399

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

Celling	80%				70%				50%				30%				0%
Wall	70	50	30	10	50	10	50	10	50	10	50	10	50	10	50	10	0
RCR	Zonal cavity method - Effective floor reflectance = 20%																
0	119	119	119	119	116	116	111	111	106	106	100	100	97	93			
1	113	110	107	105	108	103	104	100	100	97	90	94	88	85			
2	107	102	97	93	100	92	97	90	94	88	85	81	78	71			
3	101	94	88	84	92	83	90	82	87	81	78	74	71	65			
4	95	87	80	76	85	75	83	74	81	74	71	67	65	60			
5	89	80	74	69	79	69	77	68	75	67	65	62	60	55			
6	84	74	67	63	73	63	72	62	70	62	60	57	55	50			
7	79	69	62	57	68	57	67	57	65	57	55	52	50	46			
8	74	64	57	53	63	53	62	52	61	52	50	48	46	43			
9	70	59	53	49	59	48	58	48	57	48	46	44	43				
10	66	56	49	45	55	45	54	45	53	44	43						

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.

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