LIGHTOLIER

Downlighting

Calculite 2"

C2DL Downlight



The Calculite 2" family features downlight, accent adjustable, and lensed wall wash serving as a complete recessed offering to accommodate all recessed application needs. The 50° light cut off and multiple adjustable beam angles provide quality light in a miniature aperture.

Project:

Location:

Cat.No:

Type:

Lamps: Qty:

Notes:

The light engine is designed to be installed as a retrofit without need for a frame. Frames are optional to accommodate ceiling construction.

Follow the ordering guidelines below. Each step is a separate order line.

Step 1 **Frame:** Optional accessories available. Ordered & shipped separately.



Frame

2	

2RN: 2" Round New Construction, Non-IC
2SN: 2" Square New Construction, Non-IC
2RA: 2" Round New Const., IC, AirSeal, CCEA
2SA: 2" Square New Const., IC, AirSeal, CCEA

Example: 2RN

Step 2 **Engine & Trim:** Ordered & shipped as a single product.



Engine

C2	

Example: C2RDL06SPUPZULS6010-C2RDLWT

Step 3 (optional) **Accessories:** Ordered & shipped separately.

Engine

example: C2RDL06SPUPZULS6010

Series[1]	Style	Lumens	CRI	CCT	Beam	Dimming / Voltage	Flange	Options
C2R Calculite 2" round **C2S** Calculite 2" square	**DL** Downlight	**06** 600lm **09** 900lm **15** 1500lm[2]	**9** 90CRI	**27** 2700K **30** 3000K **35** 3500K **40** 4000K	**NS** Narrow Spot (15°) **SP** Spot (19°) **NF** Narrow Flood (30°) **FL** Flood (55°)	**UPZU** 0-10V 1% ELV 3% Triac 3% Unv (120V/277V) **LU** Lutron PEQ 100% – 0.1% Unv (120V/277V)	**–** Flanged (leave blank) **F** Flangeless[3]	**MesoOptics** **–** Symmetrical soft focus **LS6010** Linear spread 60x10 **ASY21** Asymmetrical 21° bend angle **ASY8** Asymmetrical 8° bend angle **Hex Cell Louver** **HCL** 2" hex cell louver Holder standard on light engine, order with MesoOptics film option or blank for symmetrical (ex. HCLLS6010)

Trim

example: C2RDLWT

Series	Style	Finish	Flange	Options
C2R Calculite 2" round **C2S** Calculite 2" square	**DL** Downlight	**WT** Textured white	**–** White **F** Flangeless[3]	**WL** Wet location
		WH White (matte) **BK** Black (painted matte) **BT** Textured black **BZ** Bronze **D** Aluminum diffuse **CD** Clear diffuse (applied finish) Special painted finishes available with RAL number.	**–** White (matte) **P** Matching reflector **F** Flangeless[3]	

1. Standard light engine may be used as a remodeler. Optional traditional frame-in kits are available.
2. The 1500lm (15) lumen option is available for non-IC only.
3. Flangeless option code must be ordered for both light engine and trim. Mud-in ring is integral with the light engine.
4. Requires IRT9015 IR remote & Interact Pro App for commissioning.
5. Mud-in kits provided as standard with engines but are available as accessories as needed to support construction.

Accessories (order & install separately)

Field installed changeable TIR optics

CA2NSSFR	15° TIR reflector
CA2SPSFR	19° TIR reflector
CA2NFSFR	30° TIR reflector
CA2FLSFR	55° TIR reflector

Accent accessories

CL2HCL	2" hex cell louver

MesoOptics accessories for Downlight & Wall Wash

CA2RSYM	Symmetrical
CA2RLS6010	60x10 linear spread
CA2RASY21	21° bend angle
CA2RASY8	8° bend angle

Accessories

SWCS	New or remodel construction, integral RADIO or remote (recessed or surface) sensing with 0-10v luminaires. See SWCS spec sheet for more details.[4]
CA2RFT	Round 2" Mud-in Kit[5]
CA2SFT	Square 2x2 Mud-in Kit[5]

Declare. c UL us LISTED mesoOptics IC INSULATION CONTACT WET LOCATION RoHS COMPLIANT interact ready.

C2DL Calculite 2"

Round and Square Downlight

Applications

- Ideal for use in retail, restaurants, residential, and office spaces to accentuate the space and provide tactical or ambience lighting from a minimalistic aperture
- The light engine is designed to be installed as a retrofit without need for a frame. Frames are optional to accommodate ceiling construction.
- Driver pod is tethered electrically to light engine.
- All components are designed to accommodate below ceiling accessibility through the aperture without need for tools.

Dimensions

- **Max Ceiling Thickness:** 1.50"
- **Ceiling Cutout:** 3"

Frame-in-kits (optional)

- Light engines are designed to be installed as a retrofit without need for a separate frame
- Die formed steel construction with 1/2" collar for ease of cutting the hole in ceiling.
- Rough-in wiring is done on the light engine driver pod.
- Four models offered:
  - **2RN:** 2" Round New Construction, Non-IC
  - **2SN:** 2" Square New Construction, Non-IC
  - **2RA:** 2" Round New Const., IC, AirSeal, CCEA*
  - **2SA:** 2" Square New Const., IC, AirSeal, CCEA*

* 900lm maximum for IC applications.

Optical systems

- **TIR** optics precisely control the beam pattern. Optics are field changeable.
- **PET** film provides a clean beam with mitigated spill and precise color mixing. Film is held in place via a holder integral to the engine that fits precisely TIR optic and LED socket.
- **COB** (chip on board) provides long useful life with precise color control over time.
- Finishing section trims are durable die cast aluminum with precision painted finish. May be easily repainted in the field to match desired aesthetic appeal.
- 50° cutoff angle.
- Wet location (WL) option lens is clear tempered glass secured to the top of the trim.

Dimming

- UPZ option is universal 0-10v (1%), electronic low voltage (3%), and triac (3%) in a single driver
- Lutron PEQ (L) dimming to 0.1%

Hex Cell Louver

- Available as factory installed option or field installed accessory.
- Light engine includes holder attached to primary TIR optic.
- Holder supports one MesoOptics film and one louver.

MesoOptics optical diffusion film

- **PET** film containing surface relieved, microscopic light diffusing structures/elements.
- Provides a clean beam with mitigated spill at articulated angles.
- Optimizes luminaire efficacy via high optical transmission.
- Homogenizes light engine luminance providing smooth gradients of white light.
- Other distribution options available including linear spread and asymmetric.
- May be field installed with available accessories.
- Holder is standard on light engines.

Light engine

- Die cast heat sinks provide optimized passive thermal management to maximize LED lumen maintenance.
- Precision spun lower collar mechanically attaches to heat sink assembly tool-free via springs. Integral leaf springs for flanged configurations allow easy installation into the ceiling or on optional frame-in kits.
- For flangeless applications, mesh mud-in ring is integral to the lower collar eliminating the need to handle/order an accessory. Must specify flangeless light engine and trim. Separate mud-in rings are available as accessories to support construction (CA2RFT, CA2SFT).
- Predicted 70% lumen maintenance to >65,000 hours.
- 32°-86°F ambient operating range (0°-30°C).

Labels and listings

- cULus listed for damp locations, Wet listed for use in covered ceilings with "WL" trim option code
- CEC Title 24 JA8 certified
- CCEA listing on 2RA/2SA frames
- Red List Declare label certified, ID SIG-0018 (View full Declare label)

Warranty

5 year limited warranty

Visit Signify.com/warranties for more information on Signify's standard 5-year limited warranty on complete luminaire systems.

0-10v/ELV/Triac Electrical Tables

Light Engine	Input volts	Input current	Drive current	Input power
C2_06_UPZU	120V	0.08A	250mA	9.8W
	277V	0.04A	–	–
C2_09_UPZU	120V	0.11A	350mA	13.4W
	277V	0.05A	–	–
C2_15_UPZU	120V	0.19A	600mA	23.3W
	277V	0.08A	–	–

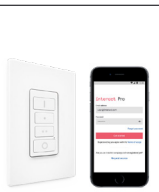
Lutron Electrical Tables

Light Engine	Input volts	Input current	Drive current	Input power
C2_06_LU	120V	0.08A	250mA	9.7W
	277V	0.04A	–	–
C2_09_LU	120V	0.11A	350mA	13.6W
	277V	0.05A	–	–
C2_15_LU	120V	0.19A	600mA	23.3W
	277V	0.08A	–	–

C2DL Calculite 2"

Round and Square Downlight

interact







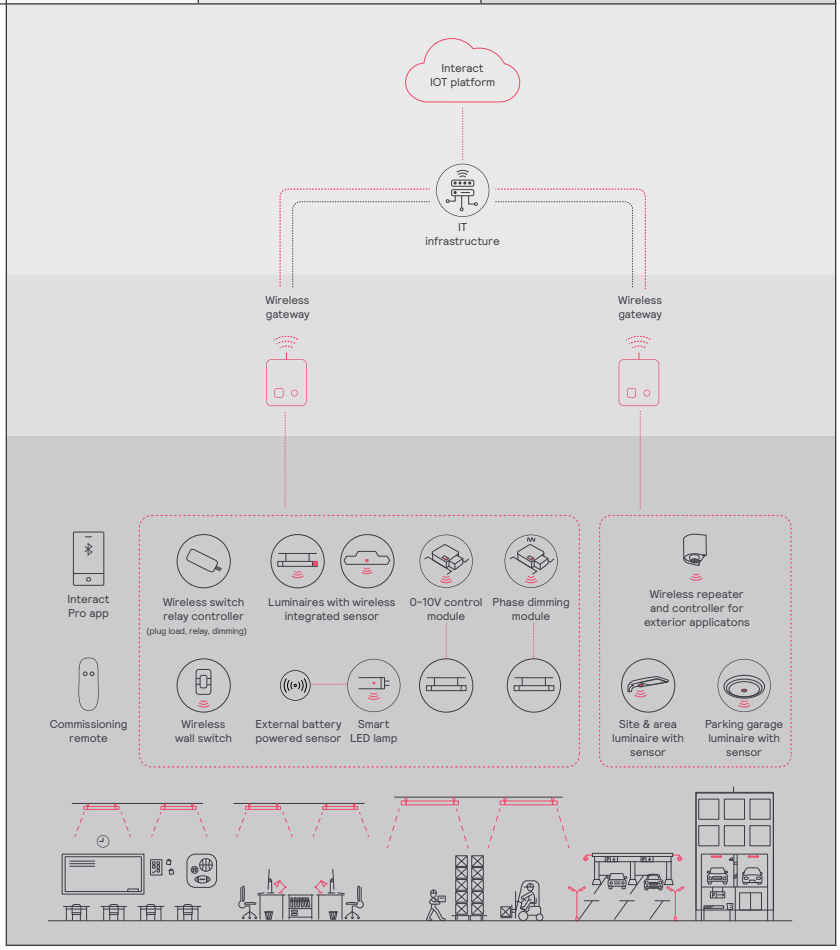
		Standalone	Gateway Connected: Option 1	Gateway Connected: Option 2
Dimming, grouping, and zoning		✓	✓	✓
Bluetooth and ZigBee enabled		✓	✓	✓
Motion sensing and daylight harvesting		✓	✓	✓
Integration with 0–10V and phase dimming fixtures		✓	✓	✓
Code compliance		✓	✓	✓
Granular dimming and dwell time		✓	✓	✓
Correlated color temperature (CCT) tuning by switch	New	✓	✓	✓
Support for sensor-based Tunable White luminaires	New	✓	✓	✓
Energy reporting and monitoring			✓	✓
Scheduling			✓	✓
Demand response			✓	✓
BMS integration (BACnet)				✓
Floor plan visualization				✓
IoT sensors for wellness				✓
IoT Apps for productivity				✓

Currently supported maximum system size

To be able to design the lighting system correctly for the customer, it is important to know the prime characteristics of the system, its possibilities and limitations.

System level	
Total number of gateways	Unlimited
Total number of devices	200 per network
• Luminaires with integrated sensors	150
• Smart TLEDS	150
• Zones + groups	64
Total number of ZGP devices (sensors and switches)	50
• Sensors	30
• Switches	50

Group level	
Recommended number of lights	40 (maximum 150)
Number of ZGP devices	5
Number of scenes	16



C2DL Calculite 2"

Round and Square Downlight

Wireless controls options

Interact

- SWZCS is a connected sensor with integral occupancy and daylight sensing and supports wireless mesh connectivity.
- The sensor works in the standalone mode (similar to SpaceWise) when configured without a gateway or in a cloud connected mode if a compatible gateway is used.
- Interact includes an App, a portal and a broad portfolio of wireless luminaires, lamps and retrofit kits all working on the same system.
- Startup is implemented via Interact Pro App (Android or iPhone) & BlueTooth connectivity. The App provides flexibility to choose between a gateway or non gateway mode for setup.
- Setup with the gateway requires wired internet access to the gateway. It is possible to add a gateway at a later point.
- Prepare project configuration steps remotely and use IRT9015 remote on-site to identify and group devices together.

  Compatible with:

  - SWS200 & UID8465 wireless scene switch
  - Battery powered IP42 presence sensor OCC sensor IA CM WH 10/1
  - Battery powered IP42 presence & daylight sensor OCC-DL sensor IA CM IP42 WH
  - LCN3110: battery powered IP65 presence sensor, OCC sensor IA CM IP65W
  - LCN3120: battery powered IP65 presence & daylight sensor, OCC-DL sensor IA CM IP65 WH
- For more information on Interact visit: interact-lighting.com/interactproscalablesystem

Radio only sensor (RA or RADIO)

- Integral RA or RADIO only sensor simply enables wireless mesh connectivity to the luminaire without any occupancy or daylight sensing.
- Ideal for applications where sensing functionality is managed by other Interact devices and the luminaire only needs to have wireless connectivity.
- Interact includes an App, a portal and a broad portfolio of wireless luminaires, lamps and retrofit kits all working on the same system.
- Startup is implemented via Interact Pro App (Android or iPhone) & Bluetooth connectivity. The App provides flexibility to choose between a gateway or non-gateway mode for setup.
- Setup with the gateway requires wired internet access to the gateway. It is possible to add a gateway at a later point.
- Prepare project configuration steps remotely, identify and group devices together onsite.
- Compatible with SWS200 and UID8465 wireless scene switch, wireless Occ sensor (OCC SENSOR IA CM IP42 WH 10/1) and wireless Day/Occ sensor (OCC MULTI SENSOR IA CM WH 10/1).
- For more information on Interact visit: interact-lighting.com/interactproscalablesystem

SWCS Accessory

- Recessed Interact accessory for use in new construction or remodel construction for use with 0-10v luminaires. Available for integral RADIO, or remote sensing in either recessed or surface mounting. Refer to spec sheet for more details. https://www.usa.lighting.philips.com/api/assets/v1/file/Signify/content/SWCS-ESS/SWCS_Specification_Sheet.pdf

Sensor bundle (IAOSB or SB)

- A wireless IoT connected lighting solution for large enterprises that span across multiple floors, buildings and require multiple gateways.
- View all your projects under one dashboard and easily compare insights from multiple projects in one view.
- Compatible with SWS200 wireless scene switch, wireless Occ sensor (OCC SENSORIA CM IP42 WH 10/1) and wireless Day/Occ sensor (OCC MULTI SENSOR IA CM WH 10/1) and wireless Occupancy or Daylight & Occupancy sensors available.• Use Interact software and insights to increase building efficiency, achieve building wide integration and optimize space through occupancy analytics.
- IAOSB or SB option in addition to occupancy and daylights sensing supports advanced IoT capabilities, such as people estimation analysis, desk level temperature & humidity sensing, noise classification, and BLE beacon.
- Requires compatible Gateway and internet connectivity for commissioning.
- For more information, visit: interact-lighting.com/interactproscalablesystem

Emergency Options (ER100)

- **Power Sensing** (factory default) – Recommended UL924 option requires unswitched power sense line, absence of voltage on the normal circuit triggers luminaire to 100% output.
- **Power Interruption Detection** (field option) – Detects AC power interruption >30ms triggers 90 minute emergency mode with luminaire at 100% output.

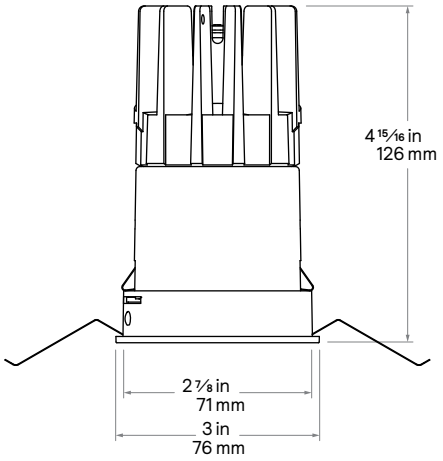
Interact supported sensor option codes across Genlyte product lines

	Evokit	Day-Brite	Ledalite	Lightolier
ZigBee + Bluetooth + Sensing	SWZCS	SWZCS	CS	SBA accessory (external)
ZigBee + Bluetooth	RADIO	RADIO	RA	RA
ZigBee + Bluetooth + Sensing + Environmental data	IAOSB	IAOSB	SB	SB
ZigBee + Highbay + Sensing	-	SWZCSH	-	-

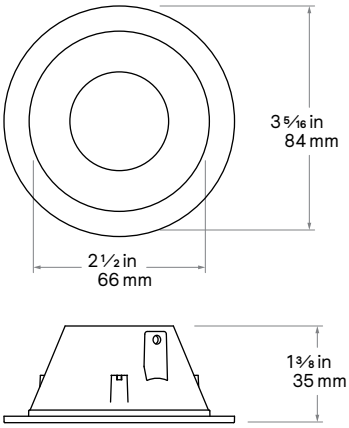
C2DL Calculite 2"

Round and Square Downlight

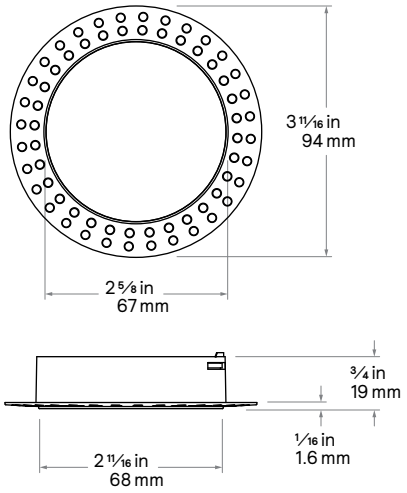
Round Engine



Round Trim

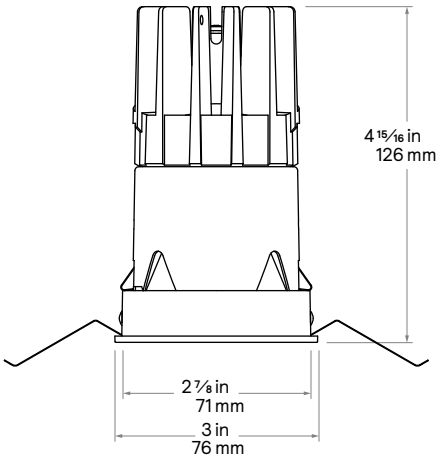


Round Mud-in ring

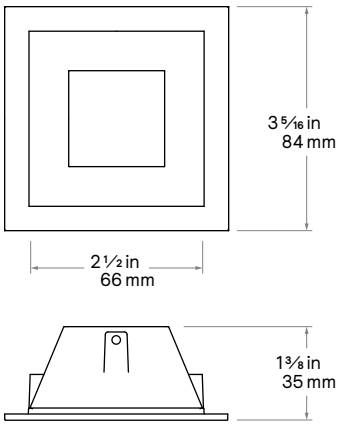


* Mud-in rings are integral to the light engine. Must order flangeless light engine and trim with (F) option code.

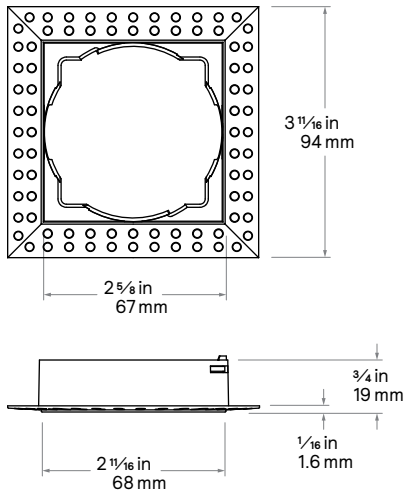
Square Engine



Square Trim



Square Mud-in ring



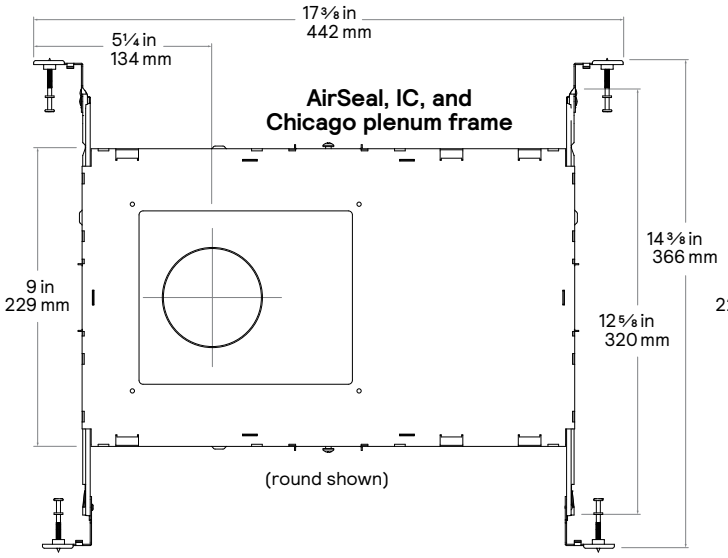
* Mud-in rings are integral to the light engine. Must order flangeless light engine and trim with (F) option code.

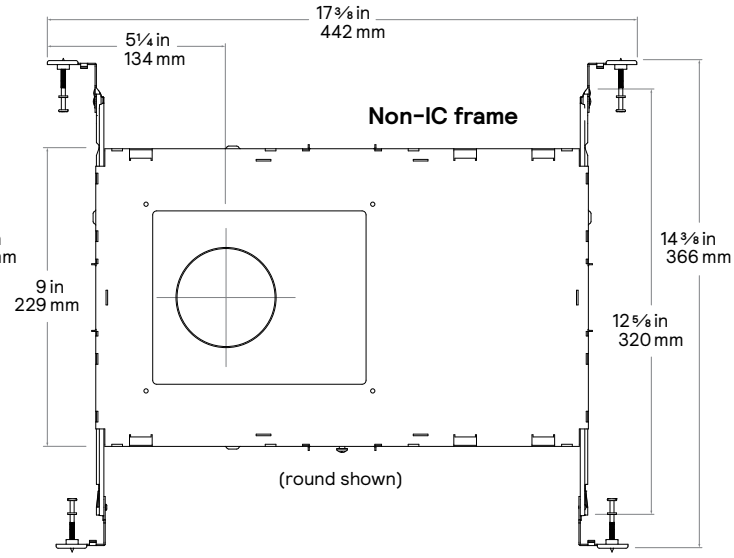
C2DL Calculite 2"

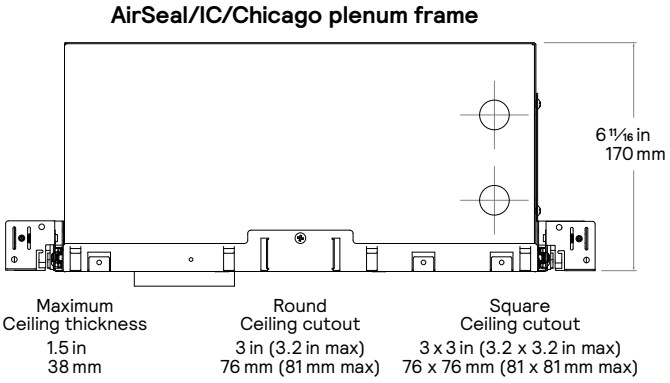
Round and Square Downlight

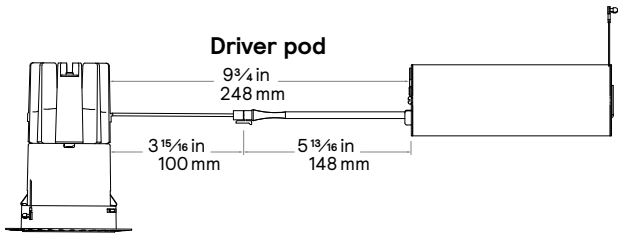
Frames

The standard C2R/C2S light engines may be installed non-IC as a remodeler with no additional frame-in kit required. Optional frames below are available to facilitate ceiling construction









C2DL Calculite 2"

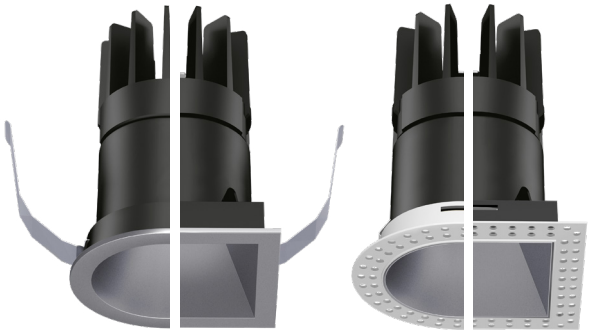
Round and Square Downlight

Finishes Shown as round reflectors but represent the finish of Calculite square reflectors.



Matched Reflector Flangeless

Clear diffuse (CD): Diffused painted finish with a hint of sparkle where a refined finish is desired.



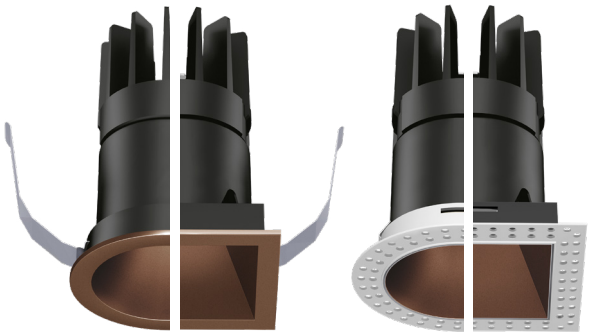
Matched Reflector Flangeless

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



Matched Reflector Flangeless

Black Textured (BT): Textured Matte finish that provides the lowest aperture brightness possible and significantly reduces source identification in a ceiling.



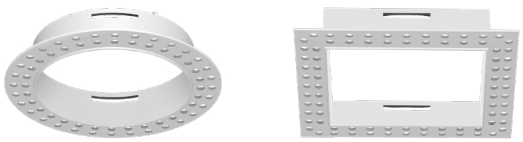
Matched Reflector Flangeless

Bronze (BZ): Matte finish that provides the lowest aperture brightness possible and significantly reduces source identification in a ceiling.



Matched Reflector Flangeless

White Textured (WT): Textured finish that provides the brightest illuminated aperture and provides the smoothest transition to most ceilings when off (white is only available with a white flange).



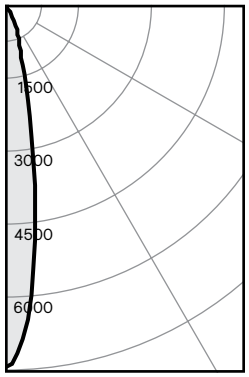
Mud-in ring (WH): Low profile, machined aluminum mud-in ring provides a raised rib to plaster up to and a 3⁄16" flange thickness. The ring is attached to the ceiling material directly via flat head screws (contractor supplied).

C2DL Calculite 2"

Round and Square Downlight

Spot beam, 1000 lm Engine, 66.9 lm/W at 14.0 W

Candela Curve



Engine: **C2RDL09935SPUOZU**
Trim: **C2RDLWT**

Output lumens:	936 lms
Input watts:	14 W
CRI:	90 min
CCT[1]:	3500K
Spacing Crit.:	0.32
Beam Angle:	18°

Zonal summary

Zone	Lumens	%Luminaire
0-30	888	94.9%
0-40	906	96.8%
0-60	926	98.9%
0-90	936	100.0%

Angle	Mean CP	Lumens
0	5900	
5	4761	
10	2572	380
15	1179	
20	653	348
25	391	
30	62	160
35	26	
40	19	18
45	15	
50	12	11
55	10	
60	7	9
65	6	
70	4	6
75	3	
80	2	3
85	1	
90	0	1

Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	236	1.6'
6'	164	1.9'
7'	120	2.2'
8'	92	2.6'
9'	73	2.9'

* 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'	45.0	0.62
6'	29.0	0.41
7'	21.0	0.29
8'	17.0	0.24
9'	14.0	0.19

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

Efficacy: **66.9 lm/w**
Report[2]: STMR-3196

Adjustment Factors

Finish	CCT (90CRI)	Lumens
WT = 100%	4000K = 107%	1500lm = 167%
BT = 97%	3500K = 100%	900lm = 100%
BZ = 97%	3000K = 93%	600lm = 66%
D = 101%	2700K = 93%	
CD = 102%		

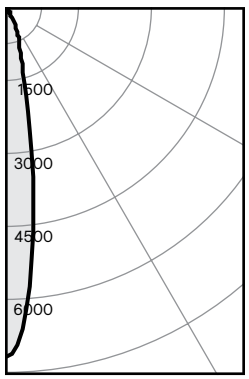
Coefficients of utilization

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%										
0	119	119	119	119	116	116	111	111	106	106	100
1	115	113	111	109	111	107	107	104	103	101	96
2	111	107	104	102	106	101	103	99	100	97	93
3	108	103	99	96	102	96	99	94	97	93	90
4	104	99	95	92	98	91	96	90	94	89	87
5	101	95	91	88	95	88	93	87	91	87	85
6	98	92	88	85	92	85	90	84	89	84	82
7	96	89	85	82	89	82	88	82	87	81	80
8	93	87	83	80	86	80	85	80	85	79	78
9	91	84	81	78	84	78	83	77	83	77	76
10	89	82	78	76	82	76	81	76	81	75	74

Room Cavity Ratio

Spot beam, 1000 lm Engine, 67.8 lm/W at 14.0 W

Candela Curve



Engine: **C2SDL09935SPUOZU**
Trim: **C2SDLWT**

Output lumens:	949 lms
Input watts:	14 W
CRI:	90 min
CCT[1]:	3500K
Spacing Crit.:	0.32
Beam Angle:	18°

Zonal summary

Zone	Lumens	%Luminaire
0-30	883	93.0%
0-40	921	97.0%
0-60	939	98.9%
0-90	949	100.0%

Angle	Mean CP	Lumens
0	5700	
5	4577	
10	2415	363
15	1117	
20	649	331
25	441	
30	169	189
35	51	
40	18	38
45	13	
50	10	10
55	9	
60	7	8
65	5	
70	4	5
75	3	
80	2	3
85	1	
90	0	1

Single unit data

Height to lighted plane	Initial center beam foot-candles	Beam diameter (ft)*
5'	228	1.6'
6'	158	1.9'
7'	116	2.2'
8'	89	2.6'
9'	70	2.9'

* 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'	45.0	0.62
6'	29.0	0.41
7'	21.0	0.29
8'	17.0	0.24
9'	14.0	0.19

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

Efficacy: **67.8 lm/w**
Report[2]: STMR-3198

Adjustment Factors

Finish	CCT (90CRI)	Lumens
WT = 100%	4000K = 107%	1500lm = 167%
BT = 97%	3500K = 100%	900lm = 100%
BZ = 97%	3000K = 93%	600lm = 66%
D = 101%	2700K = 93%	
CD = 102%		

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%										
0	119	119	119	119	116	116	111	111	106	106	100
1	115	113	111	109	110	107	107	104	103	101	96
2	111	107	104	101	105	100	102	98	99	96	93
3	107	102	99	96	101	95	99	93	96	92	89
4	104	98	94	91	97	90	95	89	93	88	86
5	101	94	90	87	94	87	92	86	90	85	83
6	98	91	87	84	90	84	89	83	88	82	81
7	95	88	84	81	88	81	86	80	85	80	78
8	92	85	81	78	85	78	84	78	83	78	76
9	90	83	79	76	82	76	82	76	81	75	74
10	87	81	76	74	80	74	80	74	79	73	72

Room Cavity Ratio

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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