

Ketra D2R Fixed Remodeler Downlight

PRODUCT DESCRIPTION

Ketra full spectrum D2R, non-IC rated, recessed LED downlights are available in fixed, adjustable, and wall-wash options to complete any lighting design project.

FEATURES

High Def Palette—covers a wide range of 16.7 million colors, including pastels, saturated colors and high CRI whites spanning from 1400 K to 10,000 K.

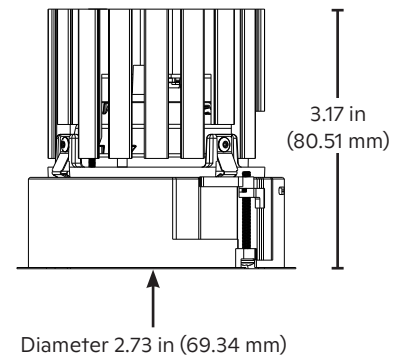
Dynamic Spectrum—precisely tunes the amount of energy across the visible spectrum to produce Natural Light, Natural Dimming, and Vibrancy.

TruBeam—produces uniform color across any available beam angle.

Color Lock—maintains your desired color point at a one-step MacAdam Ellipse across all Ketra product families and over each product's lifetime.



Fixed LED Module with Ceiling Mount



OPTIONS

	Round Bevel	Square Bevel	Round Pinhole	Square Pinhole
Flanged				
Flangeless Mud-In				
Flangeless Millwork				

Trim Finish

White	Black	Silver	Bronze	Gloss Black ¹
Silver / White ²	Black / White ²	Gloss Black / White ²		

¹ Flangeless trims only.

² White flange standard with flanged trims.

SPECIFICATIONS¹

Optical Performance

Delivered Lumens ²	
Beam Angle	16.3 W
15° beam, high output	1162 lm
25° beam, high output	1185 lm
40° beam, high output	1240 lm
60° beam, high output	1187 lm
15° beam, low glare	1049 lm
25° beam, low glare	1061 lm
40° beam, low glare	1020 lm
60° beam, low glare	986 lm
CRI (Ra)	>90 from 2700 K to 5000 K
R9	>90
Lumen Maintenance ³	50,000 hours to L70 @ 25 °C T_A
Color Point Range	1400 K – 10,000 K, Fully Saturated & Pastel
Dimming Protocol	Wireless RF/CCX (Lutron Clear Connect-Type X)
Dimming Range	0.1-100%
Delivered Efficacy	
Beam Angle	16.3 W
15° beam, high output	71 lm/W
25° beam, high output	73 lm/W
40° beam, high output	76 lm/W
60° beam, high output	73 lm/W
15° beam, low glare	64 lm/W
25° beam, low glare	65 lm/W
40° beam, low glare	63 lm/W
60° beam, low glare	60 lm/W

Environmental

Ambient Temperature ⁵	32 – 104 °F (0 – 40 °C)
Extended Ambient Temperature ⁴	-32 – 32 °F (-35 – 0 °C)
Humidity	0 – 95%, Non-condensing
Certification	UL, cUL, 120 V~: FCC Class B, T24 (JA8)⁵; Non-IC Rated ⁷
Location	UL Damp Location, UL Wet Location (shower) available with Trim Lens. Installation not compatible with metal ceilings. UL2043 and CAN/ULC-S142 rated for use in air handling spaces (plenums).
Outdoor/Indoor	Outdoor use available for fixed and adjustable option only in residential enclosed/covered patio applications. Trim lens required. Wall Wash option not available for outdoor applications.

Mechanical

Mounting Options	Flanged and mud-in ceiling mount: Installed after the ceiling installation is complete. Millwork ceiling mount: Requires access prior to ceiling installation to attach the mount.
Field Replaceable Optics	Yes
Field Replaceable LED Module	Yes
Field Replaceable Power Supply	Yes
Field LED Module Type Convertibility	Adjustable and Fixed LED Modules are interchangeable.
Fixture Weight ⁶	1.03 lb (0.468 kg)
LED Module Material	Painted and Anodized Aluminium
Lens Material	PMMA

Warranty

Limited Warranty	5 years fixture, LED and dimming warranty
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¹ All measurements are considered typical performance and were taken with 1 in (25.4 mm) white trim at 3000 K, 25 °C ambient, 100% power input, no accessory, unless otherwise stated.
² Lumen measurement complies with IES LM-79-08 testing procedures.
³ Lumen maintenance values calculated in accordance to TM-21 procedures based on LM-80 compliant measurement data.
⁴ Color accuracy not guaranteed in Extended Ambient Temperature range.
⁵ All products in the D2R family are Title 24 JA8 compliant when installed with a Trim Accessory lens on the trim. For more information, please contact Lighting Technical Support at lightingsupport@lutron.com or 1.844.LUTRON1 (1.844.588.7661).
⁶ Includes the weight of the power supply, LED module, mount and trim.
⁷ Maintain 6 in (152.4 mm) from all the insulation in the ceiling. Refer to the LED module drawings in the 'Product Dimensions' section for a visual and information.

SPECIFICATIONS ¹ (cont.)

Dimensions

Ceiling Hole Diameter/Width	3.13 in (79.37 mm) Flanged 4.00 in (101.6 mm) Flangeless Mud-In 2.83 in (71.88 mm) Flangeless Millwork
Ceiling Thickness (min-max)	0.5 – 2 in (12.7 – 50.8 mm)
Ceiling Install Cavity ²	Maintain 1.5 in (38.1 mm) of space above the product
LED Module Diameter	2.73 in (69.21 mm)
Trim Thickness	0.050 in (1.27 mm)
Mount Height	1.11 in (28.19 mm)
Mount Length/Diameter	Flanged 3.40 in (86.36 mm) Mud-In 6.00 in (152.4 mm) Millwork 3.43 in (87.12 mm)

Electrical

Power Consumption	16.3 W
Input Current	150 mA
Power Factor	>0.9
Inrush Current	800 mA, 0.2 ms duration
Surge Protection	2.5 KV
Voltage	120 V~ 60 Hz
Emergency Lighting	Evaluated by UL® for use in emergency lighting systems in accordance with standard UL® 924 and CSA C22.2 No. 141 when paired with the LVS™ model LUT-SHUNT-A-TD (UL® file E206507) ³ .
Wiring	CCX devices require continuous power for optimal mesh performance, and must be wired such that their power cannot be inadvertently or frequently interrupted. Bypass any dimmer or switch in between the breaker and the CCX device.

Communication

Processor or Gateway to Device	All CCX devices must be within 75 ft (22.9 m) of their assigned processor or gateway. It is recommended that the wireless processor or gateway and the CCX devices assigned to it are located on the same floor.
Device to Device	Each CCX device must have at least two other non-battery powered CCX devices within 25 ft (7.5 m). Groups or clusters of CCX devices assigned to the same processor or gateway must not be separated by more than 25 ft (7.5 m).
Interference Sources	CCX devices must be placed a minimum of 3 ft (1.0 m) from 2.4 GHz interference sources such as wireless access points, microwave ovens, Vive hubs.

¹ All measurements are considered typical performance and were taken with 1 in (25.4 mm) white trim at 3000 K, 25 °C ambient, 100% power input, no accessory, unless otherwise stated.

² Maintain 6 in (152.4 mm) from all insulation in the ceiling. Refer to the LED module drawings in the 'Product Dimensions' section for a visual and information.

³ See Lutron Application Note 106 (P/N 048106) at www.lutron.com for wiring details of emergency lighting in commercial systems.

COMPONENT ORDERING GUIDE

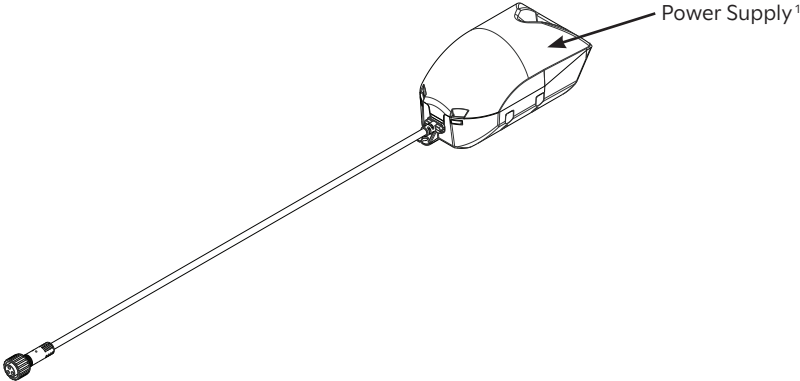
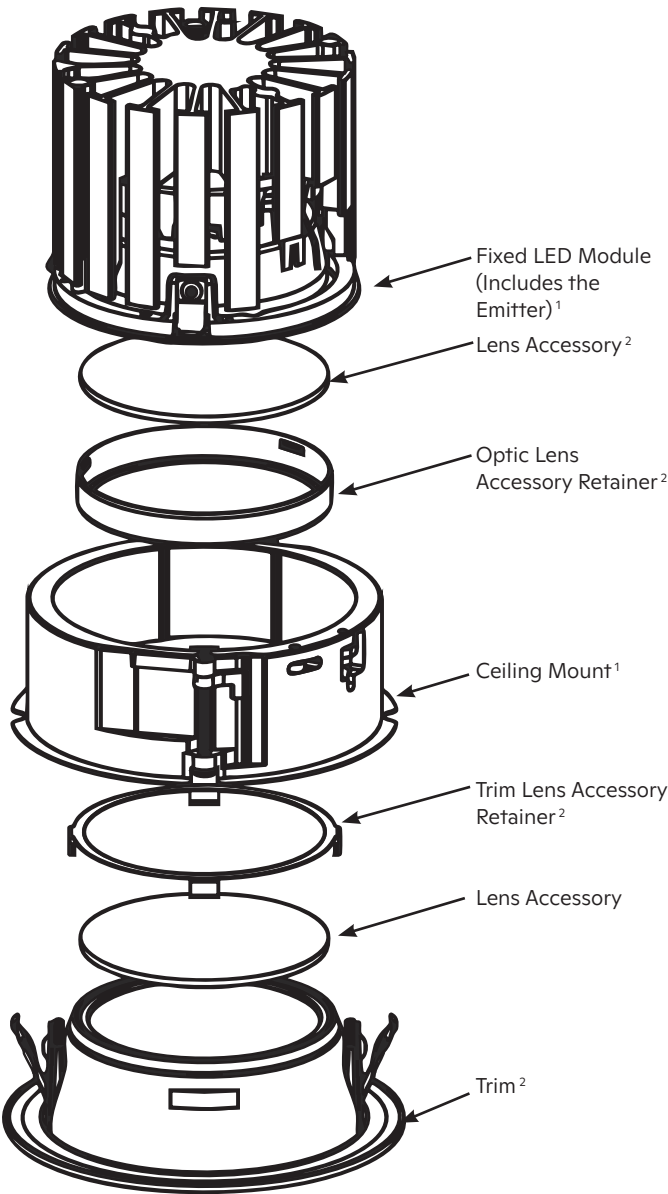
Please download this PDF to use the interactive drop down features of the ordering guide.

LED Module

	D2R	FS	F	18
Product Line	Series	LED Type	Fixture Type	Power Supply Max. Rating
		11		
Beam Angle	Optic Style	Voltage		

Order code: _____

Product Line	Code
Residential (HomeWorks compatible)	HW-
Commercial (coming soon)	CM-
Series	
D2R Fixture	D2R
LED Type	
Ketra	FS
Fixture Type	
Fixed	F
Power Supply Max. Rating	
18 W	18
Beam Angle	
Spot (15°)	15
Narrow Flood (25°)	25
Flood (40°)	40
Wide Flood (60°)	60
Optic Style	
Low Glare	L
High Output	H
Voltage	
120 V~ 60 Hz	11



1 Required for installation.
2 Optional.

COMPONENT ORDERING GUIDE (cont.)

Replacement Optics

UN-D2	OP	
Product Line	Accessory Type	Beam Angle
Order code: _____		

Optics Accessories

UN-D2	OA	
Product Line	Accessory Type	Accessory
Order code: _____		

Trim Lens Accessories

UN-D2	TL		
Product Line	Accessory Type	Shape	Accessory
Order code: _____			

Product Line	Code
Universal Part - Recessed Downlight	UN-D2
Accessory Type	
Optic	OP
Beam Angle	
Spot (15°) Low Glare ⁴	LG15
Flood (25°) Low Glare	LG25
Wide Flood (40°) Low Glare	LG40
Very Wide Flood (60°) Low Glare	LG60
Spot (15°) High Output ⁴	HO15
Flood (25°) High Output	HO25
Wide Flood (40°) High Output	HO40
Very Wide Flood (60°) High Output	HO60

Product Line	Code
Universal Part - Recessed Downlight	UN-D2
Accessory Type	
Optic	OA
Accessory ^{1,2,3}	
Soft Focus Lens ^{2,3}	S1
Frosted Lens ^{2,3}	F1
Linear Lens (10x20) ^{2,3}	L1
Clear Lens ^{2,3}	C1
Hex Louver ^{2,3}	H1
None	XX

Product Line	Code
Universal Part - Recessed Downlight	UN-D2
Accessory Type	
Trim	TL
Shape	
Square	SQ
Round	RD
Accessory ^{1,2,3}	
Soft Focus Lens ^{2,3}	S1
Frosted Lens ^{2,3}	F1
Linear Lens (10x20) ^{2,3}	L1
Clear Lens ^{2,3}	C1
None	XX

TRIM/LENS OPTION EFFICIENCY TABLE

	LG15	LG25	LG40	LG60	HO15	HO25	HO40	HO60
Clear	100%	100%	100%	100%	100%	100%	100%	100%
Soft Focus	93%	93%	93%	93%	95%	96%	96%	96%
Frosted	93%	93%	92%	93%	95%	96%	96%	95%
Linear (10×20)	92%	92%	92%	91%	94%	94%	94%	94%
Hex Louver	67%	62%	56%	50%	61%	58%	51%	45%

¹ Downlight is wet location rated when trim is installed with lens.

² Maximum of two accessories available at once across the optic and trim accessories.

³ Downlights with outdoor housings require a trim installed with lens.

⁴ 15° optics must be used with 15° emitters. 15° emitters can be confirmed in the housing ordering code. 25°, 40° and 60° optics share the same base emitter.

COMPONENT ORDERING GUIDE (cont.)

Power Supply

D2R	PS	120
Product Line	Product	Voltage

Order code: _____

Product Line	Code
Recessed Downlight	D2R

Product	
Power Supply	PS

Voltage	
120 V~ 60 Hz	120

Ceiling Mounts

UN-D2R			
Product Line	Shape	Ceiling Interface	Ceiling Thickness

Order code: _____

Product Line	Code
Universal Part	UN-D2R

Shape	
Square	SQ
Round	RD

Ceiling Interface	
Flanged	F
Flangeless Mud-In	X
Flangeless Millwork	M

Ceiling Thickness ^{1,2}	
Standard Ceiling	S
Thick Ceiling	T
Deep Ceiling	D

Ceiling Thickness Options Table

Ceiling Type	Dimensions: in (mm)	Ceiling Thickness
Flanged/Flangeless Mud In	0.5-1 (12.7-25.4)	Standard (S)
	>1-1.5 (25.4-38.1)	Thick (T)
	>1.5-2 (38.1-50.8)	Deep (D)
Flangeless Millwork	0.5-2.0 (12.7-50.8)	No selection required

NOTE: See the Trim Ordering Guide for trim options and the Replacement Optic Section for optic options.

¹ The ceiling thickness option required varies by ceiling interface. See Ceiling Thickness Options table above for details.

² No ceiling thickness selection is required for millwork.

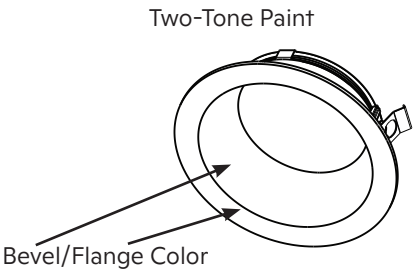
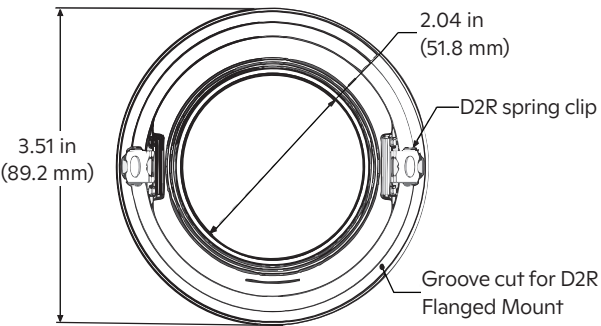
TRIM ORDERING GUIDE

Trim

UN-	D2			
Product Line	Series			
Shape	Ceiling Interface	Aperture Profile	Trim Finish	Trim Accessory

Order code: _____

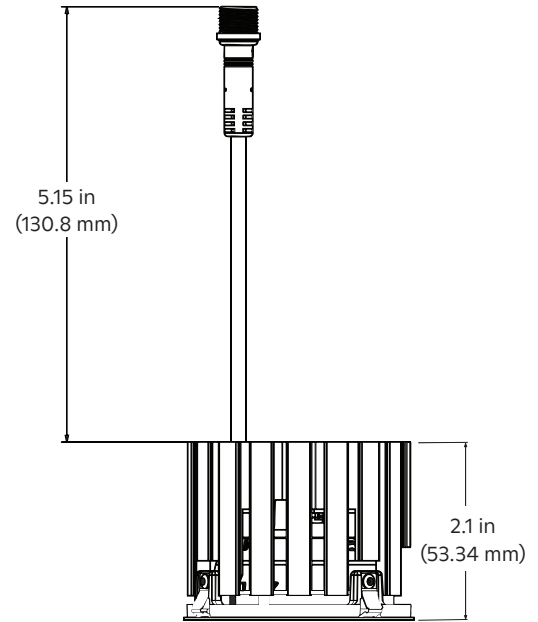
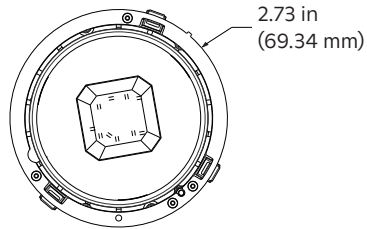
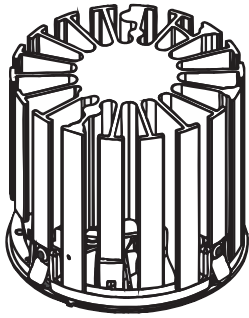
Product Line	Code	Trim Finish	
Universal	UN-	White/Paintable White ¹	WH
		Black	BK
Series			
D2 Fixture	D2	Gloss Black	GB
		Bronze	RB
Shape			
Round	RD	Silver	SR
Square	SQ	Silver/White	SW
		Black/White	BW
Ceiling Interface		Gloss Black/White	GW
Flanged	F	None	XX
Flangeless Mud-In	X		
Flangeless Millwork	M		
Aperture Profile		Trim Accessory^{2,3}	Code
Bevel	B	Soft Focus Lens ^{2,3}	S1
Pinhole	P	Frosted Lens ^{2,3}	F1
		Linear Lens (10x20) ^{2,3}	L1
		Clear Lens ^{2,3}	C1
		None	XX



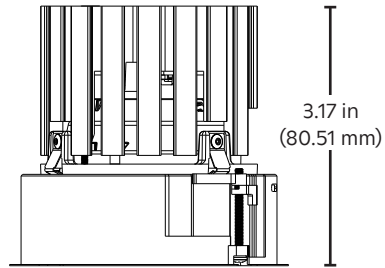
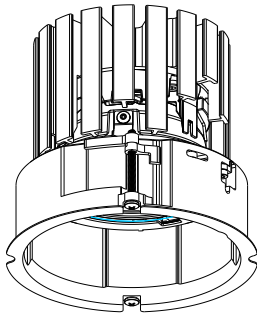
¹ White finish can be used as a primer for customer selected and applied paint.
² Maximum of two accessories available at once across the optic and trim accessories.
³ The addition of accessory lens will reduce lumen output. See Trim/Lens Option Efficiency table.

PRODUCT DIMENSIONS

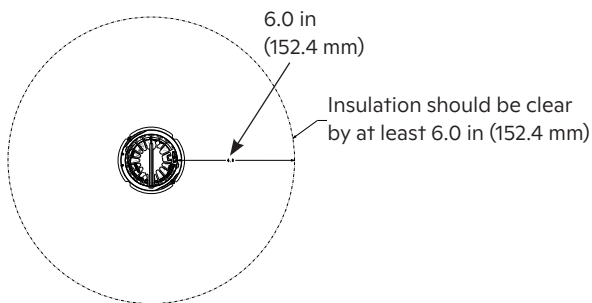
Fixed LED Module



LED Module with Ceiling Mount



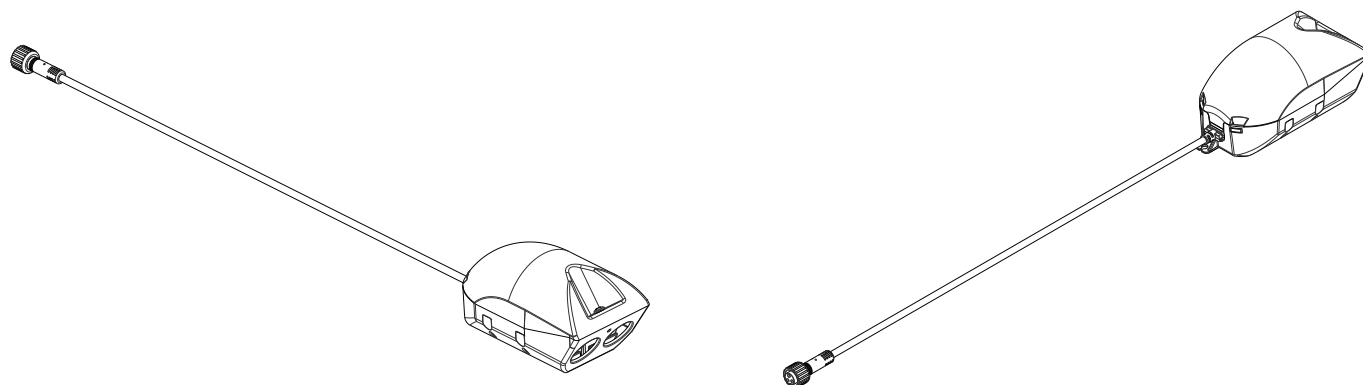
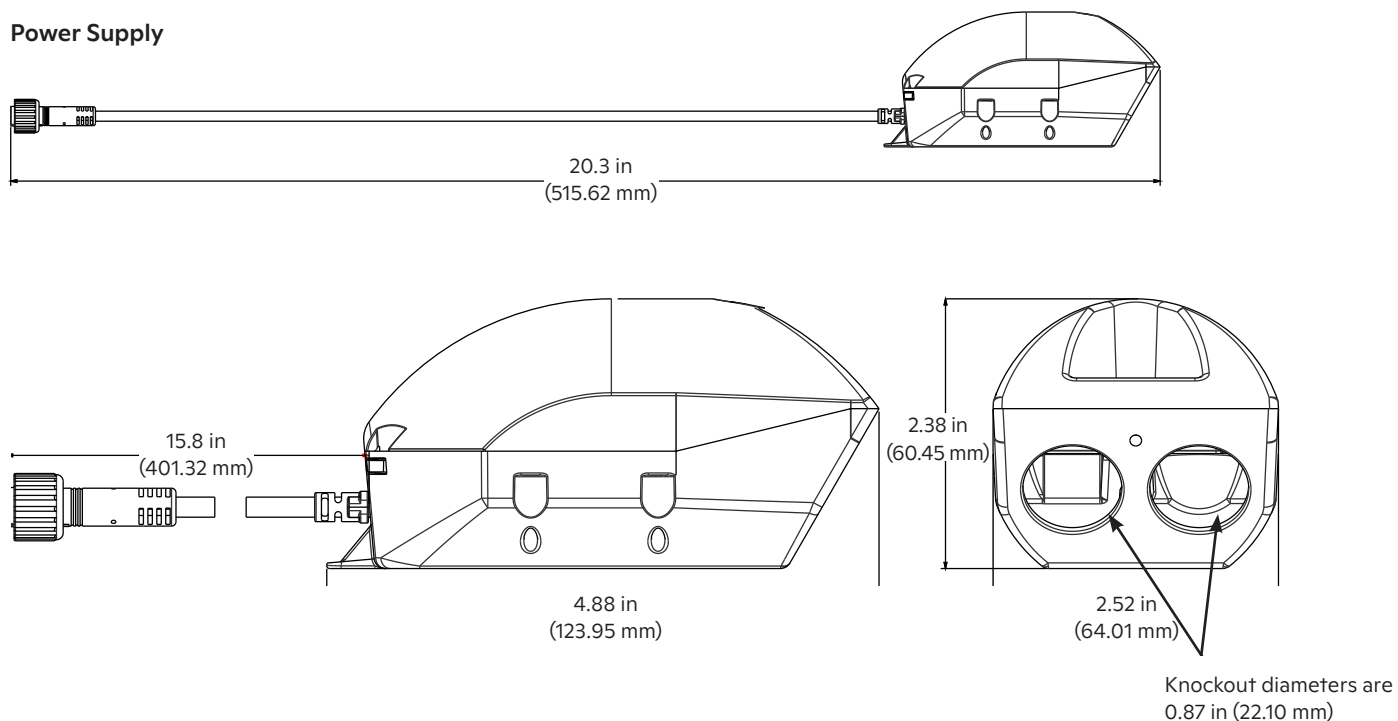
Diameter 2.73 in (69.34 mm)



View of LED module from above the ceiling

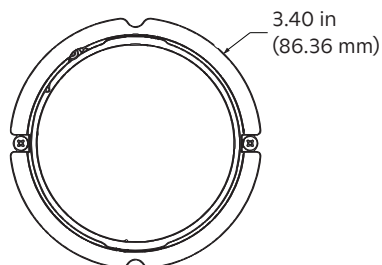
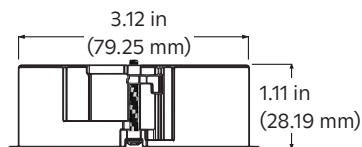
PRODUCT DIMENSIONS (cont.)

Power Supply

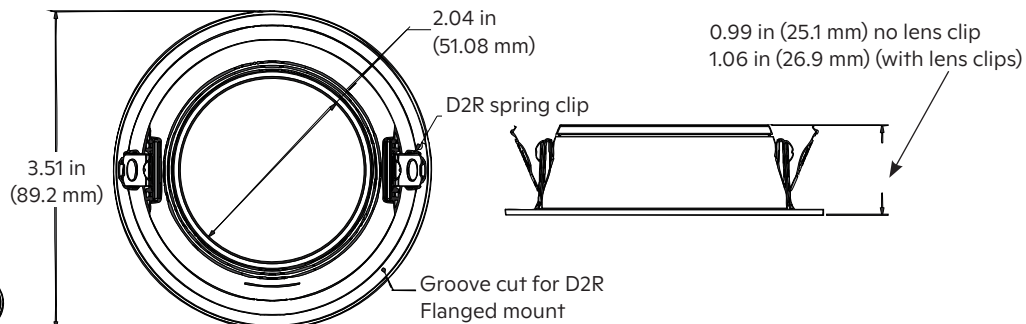
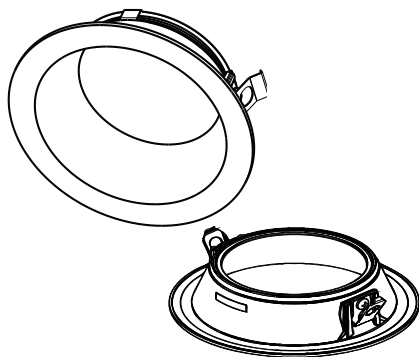


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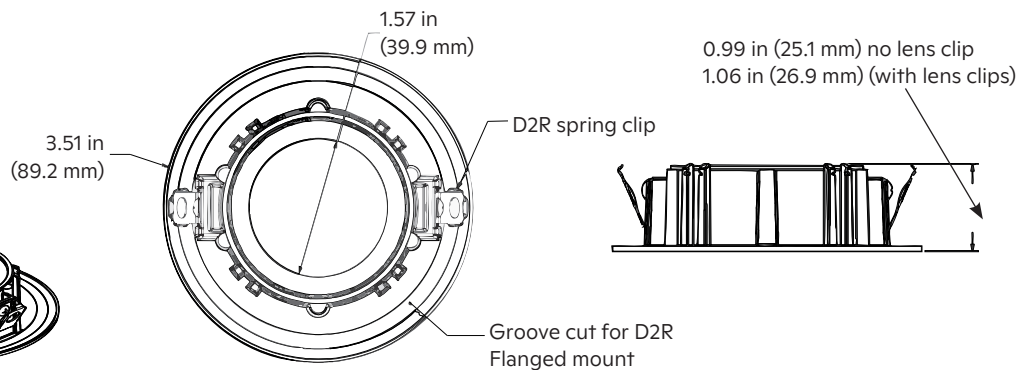
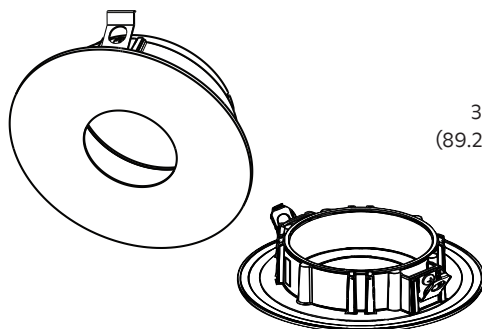
Flanged Mount, Round



Flanged Bevel Trim, Round

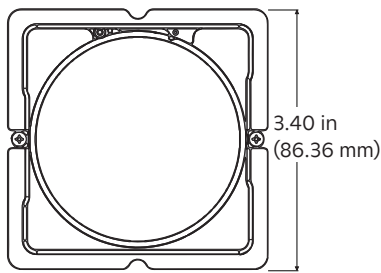
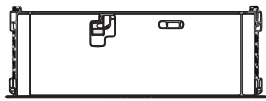
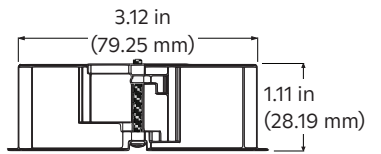


Flanged Pinhole Trim, Round

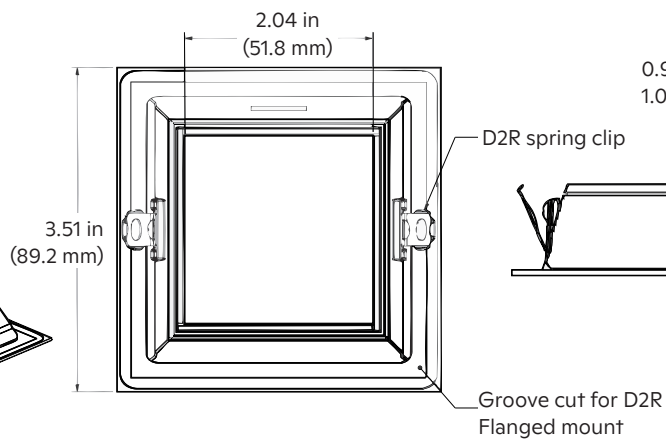
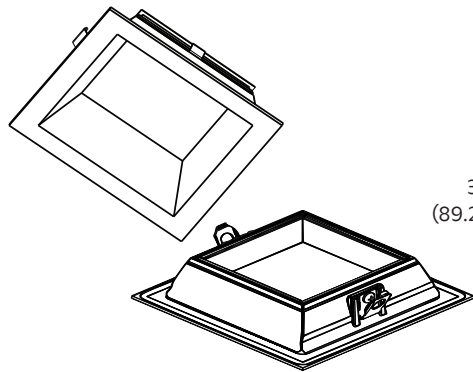


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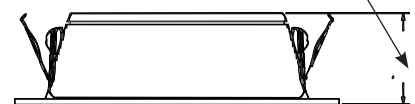
Flanged Mount, Square



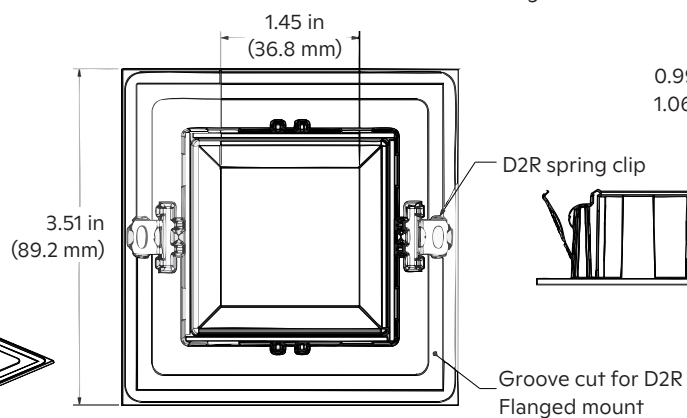
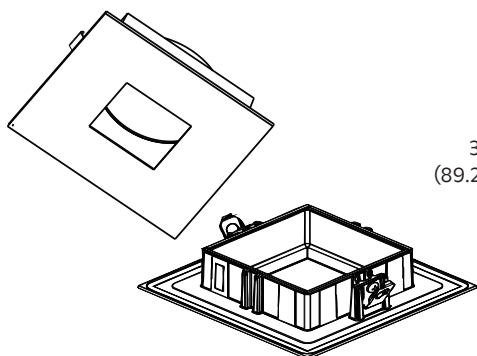
Flanged Bevel Trim, Square



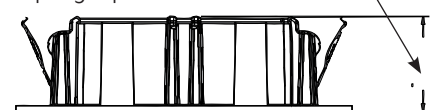
0.99 in (25.1 mm) no lens clip
1.06 in (26.9 mm) (with lens clips)



Flanged Pinhole Trim, Square

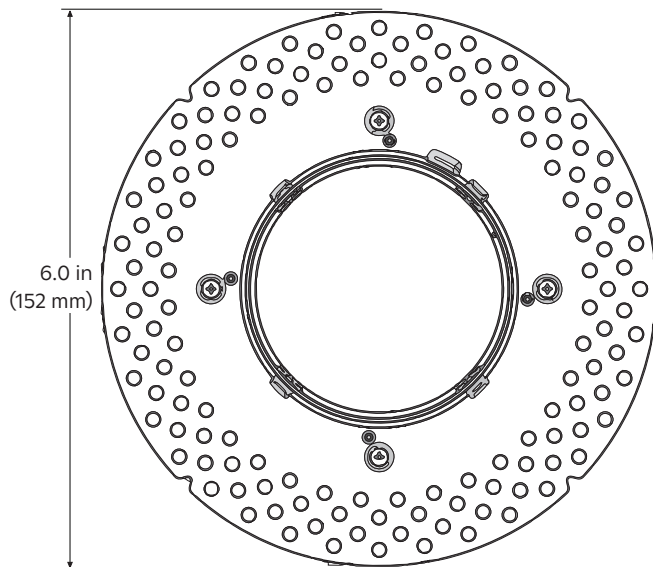
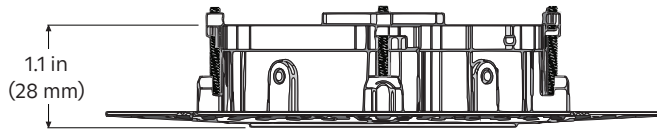


0.99 in (25.1 mm) no lens clip
1.06 in (26.9 mm) (with lens clips)



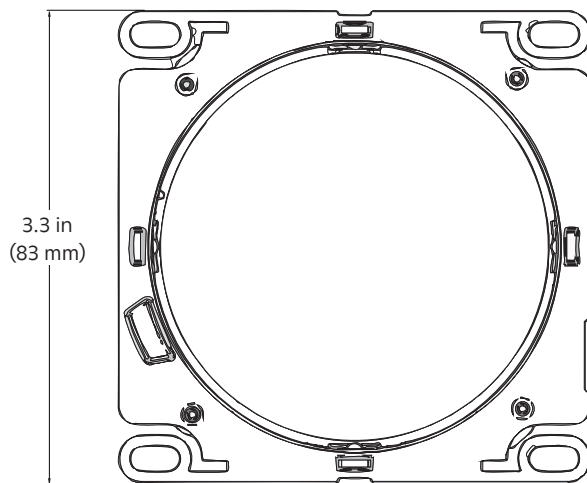
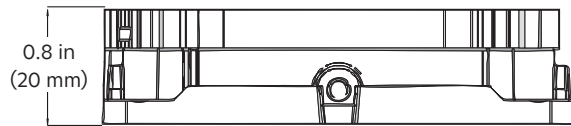
PRODUCT DIMENSIONS (cont.)

Flangeless Mud-In Mount, Round



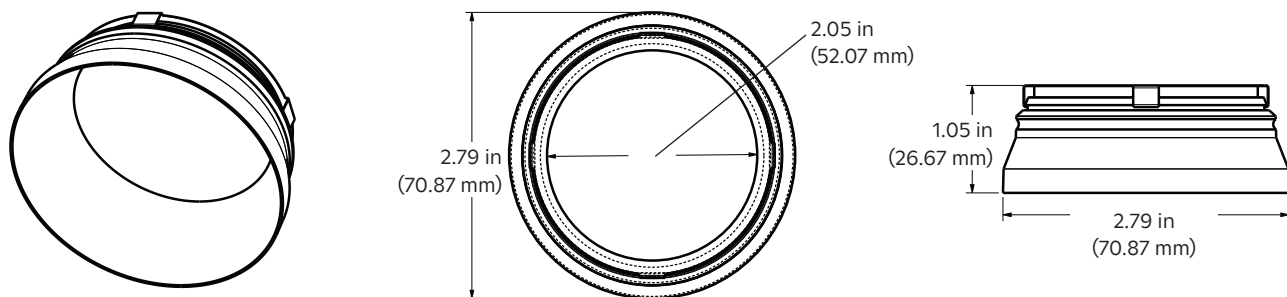
PRODUCT DIMENSIONS (cont.)

Flangeless Millwork Mount, Round

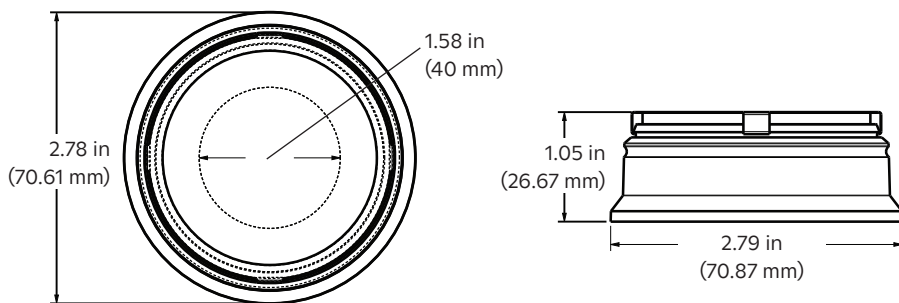


PRODUCT DIMENSIONS (cont.)

Flangeless Bevel Trim, Round

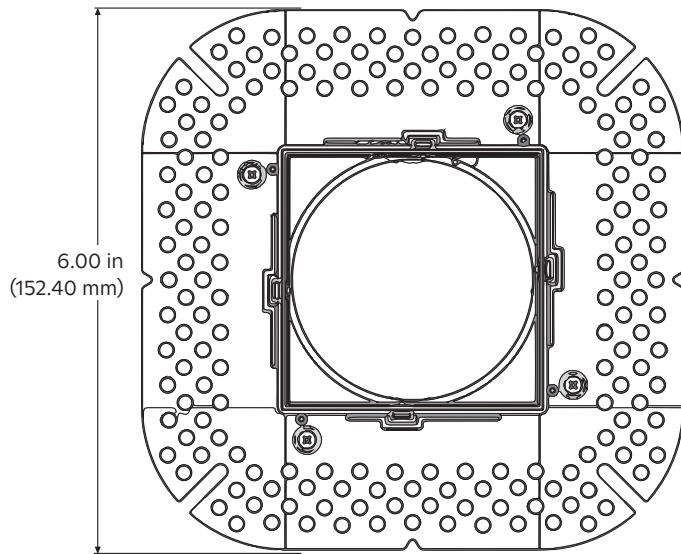
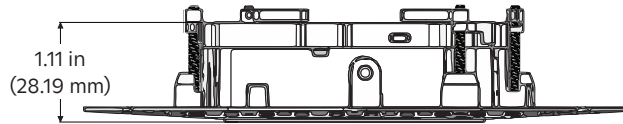


Flangeless Pinhole Trim, Round



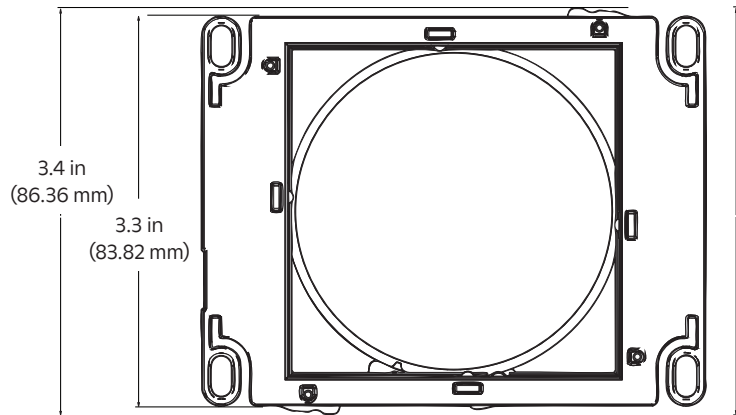
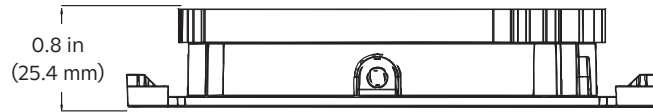
PRODUCT DIMENSIONS (cont.)

Flangeless Mud-In Mount Square



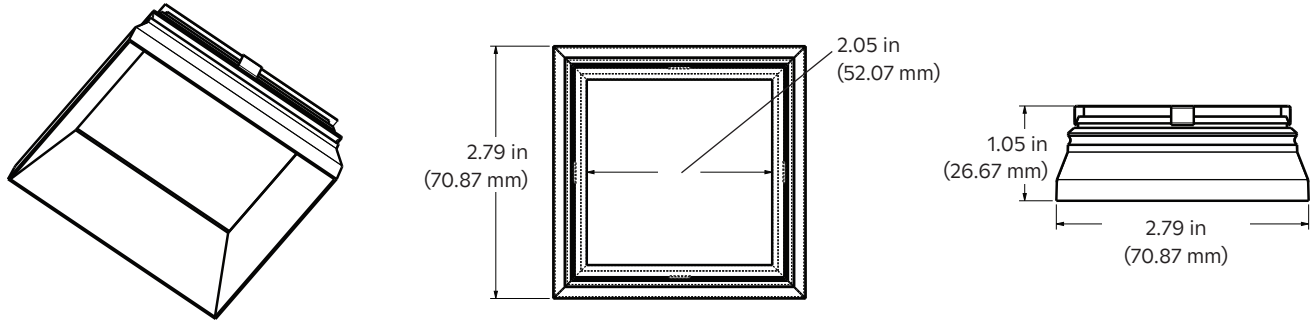
PRODUCT DIMENSIONS (cont.)

Flangeless Millwork Mount, Square

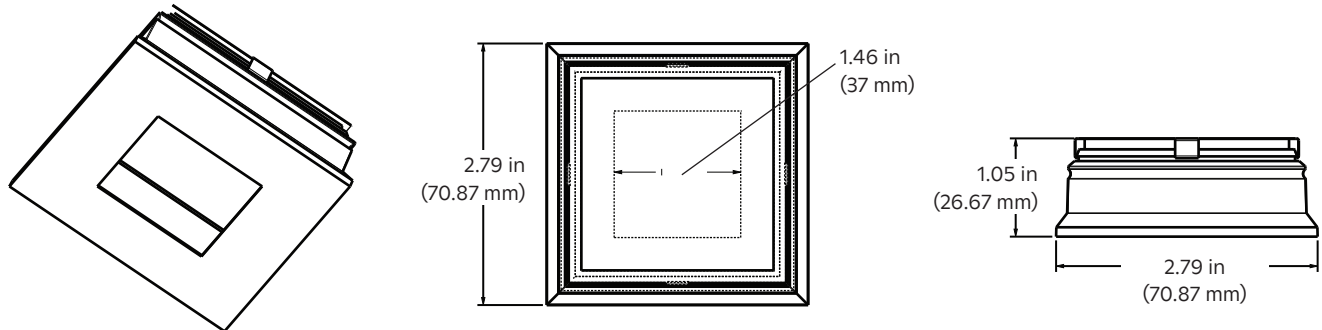


PRODUCT DIMENSIONS (cont.)

Flangeless Bevel Trim, Square



Flangeless Pinhole Trim, Square



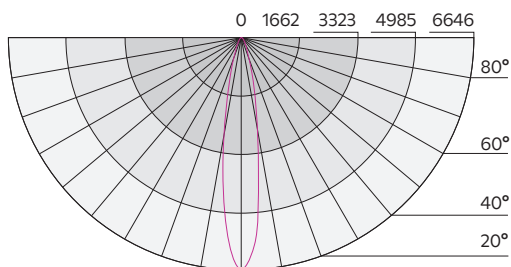
PHOTOMETRIC DATA¹

Beam Angle: 15° Spot, Low Glare

Model Number	Wattage	Delivered Lumens	CBCP
HW-D2RFSF1815L11	16.3 W	1049	6646

Foot-candles	Beam Diameter
184.6	6 ft (1.8 m)
103.9	8 ft (2.4 m)
66.5	10 ft (3 m)
46.2	12 ft (3.7 m)
33.9	14 ft (4.3 m)

Distance from Light

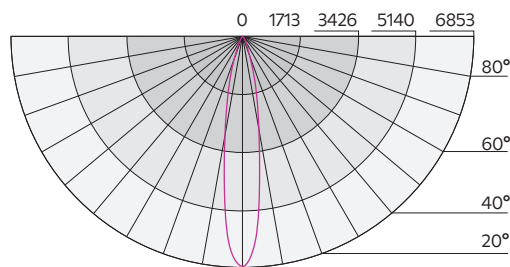


Beam Angle: 15° Spot, High Output

Model Number	Wattage	Delivered Lumens	CBCP
HW-D2RFSF1815H11	16.3 W	1162	6853

Foot-candles	Beam Diameter
190.4	6 ft (1.8 m)
107.1	8 ft (2.4 m)
68.5	10 ft (3 m)
47.6	12 ft (3.7 m)
35.0	14 ft (4.3 m)

Distance from Light

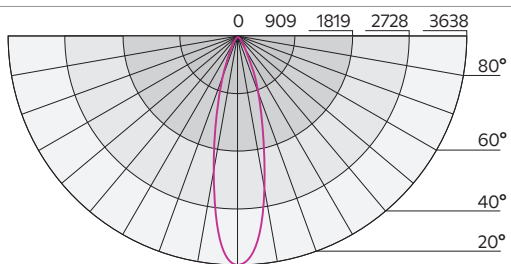


Beam Angle: 25° Spot, Low Glare

Model Number	Wattage	Delivered Lumens	CBCP
HW-D2RFSF1825L11	16.3 W	1061	3638

Foot-candles	Beam Diameter
101.0	6 ft (1.8 m)
56.8	8 ft (2.4 m)
36.4	10 ft (3 m)
25.3	12 ft (3.7 m)
18.6	14 ft (4.3 m)

Distance from Light

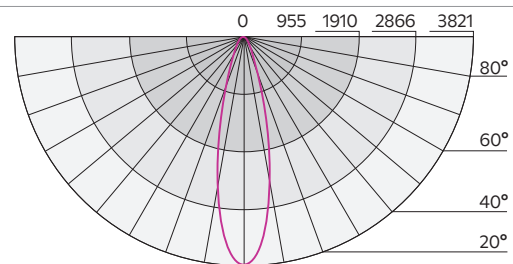


Beam Angle: 25° Spot, High Output

Model Number	Wattage	Delivered Lumens	CBCP
HW-D2RFSF1825H11	16.3 W	1185	3821

Foot-candles	Beam Diameter
106.1	6 ft (1.8 m)
59.7	8 ft (2.4 m)
38.2	10 ft (3 m)
26.5	12 ft (3.7 m)
19.5	14 ft (4.3 m)

Distance from Light



¹ All data is simulated to represent the typical performance expected with the following parameters: 1 in (25.4 mm) white trim, with light engine at nadir, at 3000 K, 25 °C ambient, 100% power input, default vibrancy, unless otherwise stated.

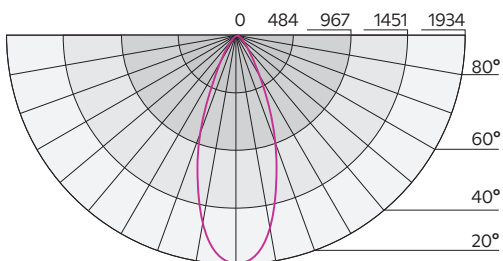
PHOTOMETRIC DATA¹ (cont.)

Beam Angle: 40° Wide Flood, Low Glare

Model Number	Wattage	Delivered Lumens	CBCP
HW-D2RFSF1840L11	16.3 W	1020	1934

Foot-candles	Beam Diameter
53.7	6 ft (1.8 m)
30.2	8 ft (2.4 m)
19.3	10 ft (3 m)
13.4	12 ft (3.7 m)
9.9	14 ft (4.3 m)

Distance from Light

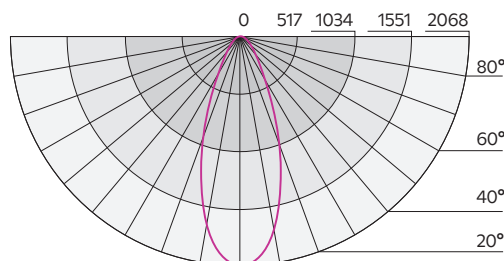


Beam Angle: 40° Wide Flood, High Output

Model Number	Wattage	Delivered Lumens	CBCP
HW-D2RFSF1840H11	16.3 W	1240	2068

Foot-candles	Beam Diameter
57.5	6 ft (1.8 m)
32.3	8 ft (2.4 m)
20.7	10 ft (3 m)
14.4	12 ft (3.7 m)
10.6	14 ft (4.3 m)

Distance from Light

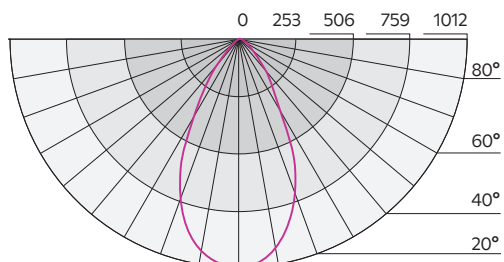


Beam Angle: 60° Very Wide Flood, Low Glare

Model Number	Wattage	Delivered Lumens	CBCP
HW-D2RFSF1860L11	16.3 W	986	1021

Foot-candles	Beam Diameter
28.1	6 ft (1.8 m)
15.8	8 ft (2.4 m)
10.1	10 ft (3 m)
7.0	12 ft (3.7 m)
5.2	14 ft (4.3 m)

Distance from Light

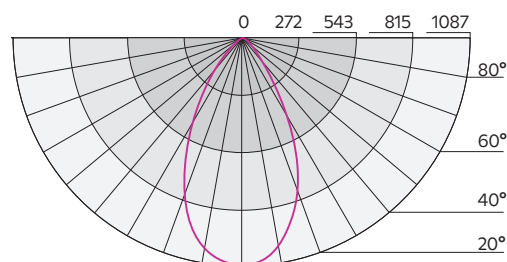


Beam Angle: 60° Very Wide Flood, High Output

Model Number	Wattage	Delivered Lumens	CBCP
HW-D2RFSF1860H11	16.3 W	1187	1087

Foot-candles	Beam Diameter
30.2	6 ft (1.8 m)
17.0	8 ft (2.4 m)
10.9	10 ft (3 m)
7.5	12 ft (3.7 m)
5.5	14 ft (4.3 m)

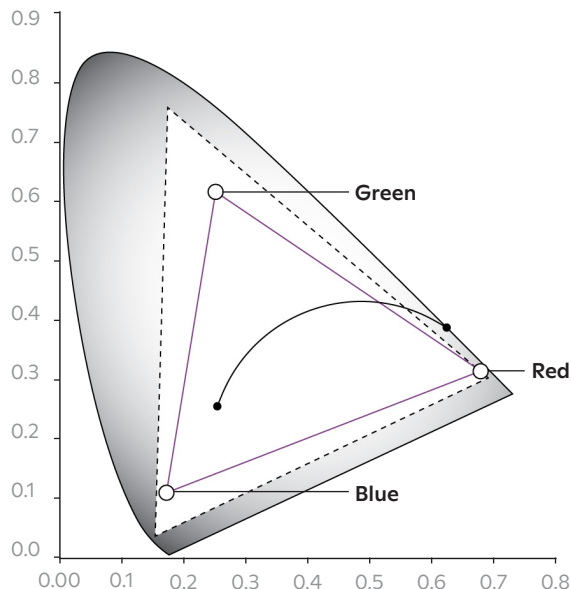
Distance from Light



¹ All data is simulated to represent the typical performance expected with the following parameters: 1 in (25.4 mm) white trim, with light engine at nadir, at 3000 K, 25 °C ambient, 100% power input, default vibrancy, unless otherwise stated.

WIDE GAMUT

CIE 1931 Color Chart



Ketra's D2R LED Downlight can easily be commissioned into Lutron HomeWorks systems (Athena or myRoom XC- coming soon). The product can reproduce any color point with the triangle shaped gamut indicated in the chart to the left. With Ketra's Color Lock tool, the color point is maintained to an accuracy of one- step MacAdam Ellipse over the lifetime of the product and across operating temperature ranges.

- **Color Lock**—Color point is maintained to an accuracy of one-step MacAdam Ellipse over the lifetime of the product and across operating temperature range.
- **Expanded Gamut**—Color lock not guaranteed such that each product produces the most saturated color of which it is capable.

D2R General Specifications

Color Point Maintenance: Employ closed loop optical and thermal feedback capable of maintaining color point accuracy at a one-step MacAdam ellipse over product lifetime.¹

Wireless Capability: LED light source shall have an integrated wireless control on board.

Color Rendering Index (CRI): Capable of CRI greater than 90 at any point along the Black Body Curve from 2700 K to 5000 K.

Single Source Multi-Die Modular Emitter/LED Module Design: Employ a single source multi-die modular emitter/LED module consisting of both monochromatic and phosphor converted blue LED die.

LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

Diagnostic reporting capability²: Clear Connect-Type X (CCX) light sources provide diagnostics and built-in technology to check input voltage and wireless connectivity.

Lighting System Capable of the Following Dimming Functionality:

1. Automatically mimicking natural daylight by shifting Correlated Color Temperature (CCT) and intensity based on time-of-day.
2. Shifting from high CCT at high intensity to low CCT at low intensity, mimicking dimming curve of an incandescent lamp.
3. Changing intensity while maintaining full color spectrum or CCT.
4. Changing full color spectrum or CCT while maintaining intensity.

Spectral Power Distribution Manipulation: Light system capable of manipulating the Spectral Power Distribution (SPD) by automatically adjusting distributions of color intensity while maintaining the same Correlated Color Temperature (CCT).

Dimming Range: Dimmable from 100 to 0.1 percent measured luminous flux.

Color Point Range: Single light source capable of producing 16.7 million colors and white from 1400 K to 10,000 K Correlated Color Temperature (CCT).

¹ Color accuracy not guaranteed in Extended Ambient Temperature range.

² For diagnostics support or more information, please contact Lighting Technical Support at lightingsupport@lutron.com or 1.844.LUTRON1 (1.844.588.7661).