

Ketra D2 Fixed

PRODUCT DESCRIPTION

Ketra full spectrum D2 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 1,400 K to 10,000 K.

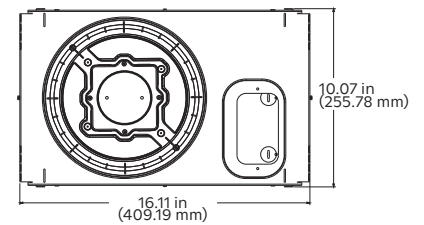
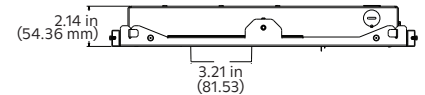
Dynamic Spectrum—precisely tunes the amount of energy across the visible spectrum to produce Natural Light, Natural Dimming, and Vibrancy.

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, IC Fixture



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	18 W
15° beam, high output	1230 lm
25° beam, high output	1240 lm
40° beam, high output	1301 lm
60° beam, high output	1231 lm
15° beam, low glare	1140 lm
25° beam, low glare	1160 lm
40° beam, low glare	1118 lm
60° beam, low glare	1096 lm
CRI (Ra)	>90 from 2,700 K to 5,000 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	18 W
15° beam, high output	69 lm/W
25° beam, high output	70 lm/W
40° beam, high output	75 lm/W
60° beam, high output	71 lm/W
15° beam, low glare	64 lm/W
25° beam, low glare	65 lm/W
40° beam, low glare	64 lm/W
60° beam, low glare	63 lm/W

Environmental

Ambient Temperature ⁵	32 – 104 °F (0 – 40 °C)
Extended Ambient Temperature	-32 – 32 °F (-35 – 0 °C)⁴
Humidity	0 – 95%, Non-condensing
Certification	UL, cUL, 120 V~: FCC Class B, IC Rated; T24(JA8)⁶
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.
Warranty	5 year fixture, LED and dimming warranty

Mechanical

Mounting Options	Supplied with standard 14 in to 24 in (356 mm to 610 mm) adjustable hanger bars and optional butterfly brackets
Field Replaceable Optics	Yes
Field Replaceable Light Engine	Yes
Field Replaceable Power Supply	Yes
Field Fixture Type Convertibility	Fixed housing can not be converted to an Adjustable for Wall Wash housing in the field
Fixture Weight	5.7 lb (2.59 kg)
Housing Material	Pre-painted Steel, Polymer
Lens Material	Plastic

¹ All measurements are considered typical performance and were taken with 1 in (25.4 mm) white trim, with light engine at nadir, 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 Rated for direct application of spray foam compatible with low and medium density spray foam building insulation with a maximum of R6.8 per inch.

⁶ All products in the D2 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).

SPECIFICATIONS¹ (continued)

Dimensions

Ceiling Hole Diameter/Width	3.25 in (82.55 mm) flanged; 4.25 in (108.0 mm) flangeless round mud-in; 4.00 in (101.6 mm) flangeless square mud-in; 2.83 in (71.88 mm) flangeless millwork
Ceiling Thickness (min-max)	0.625 – 2 in (15.8 – 50.8 mm)
Joist Width (min-max)	Standard Hanger Bar Install: 18.25 × 14 – 24.875 in (463.6 × 355.6 – 631.83 mm) Butterfly Bracket Install: 16 in x 16.25 – 24.875 in (406.4 × 412.75 – 631.83 mm)
Modular Emitter/LED Module Diameter	2.15 in (54.61 mm)
Housing Vertical Adjustment via Butterfly Bracket	1.75 in (44.5 mm)
Trim Thickness	0.050 in (12.7 mm)
Adjustability	Collar 95 degree rotation
Housing Height	2.14 in (54.31 mm)
Housing Length	16.36 in (415.54 mm)
Housing Width	10.07 in (255.78 mm)

Electrical

Power Consumption	18 W
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) ² .

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

² See Lutron Application Note 106 (P/N 048106) at www.lutron.com for wiring details of emergency lighting in commercial systems.

HOUSING ORDERING GUIDE

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

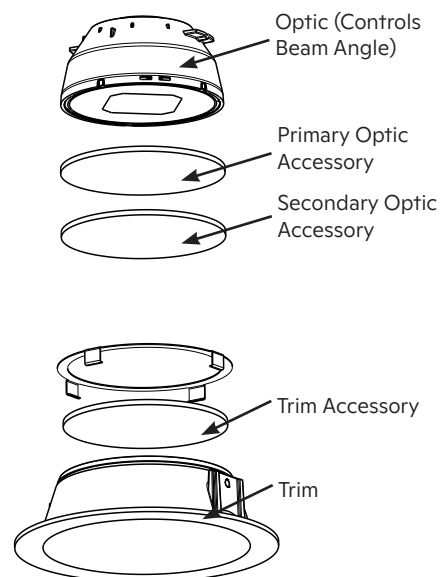
Housing

	D2	FS	FX				18
Product Line	Series	LED Type	Fixture Type	Shape	Ceiling Interface	Ceiling Thickness	Power Consumption
GT			11				
Control System	Beam Angle	Optic Style	Region/Voltage	Location	Primary Optic Accessory	Secondary Optic Accessory	

Order code: _____

Product Line	Code	Control System	Code
Residential (HomeWorks compatible)	HW-	CCX (Clear Connect-Type X)	GT
Commercial (Athena compatible)	CM-		
Series		Beam Angle	
D2 Fixture	D2	Spot (15°)	15
		Narrow Flood (25°)	25
		Flood (40°)	40
		Wide Flood (60°)	60
LED Type		Optic Style	
Ketra	FS	Low Glare	L
		High Output	H
Fixture Type		Region/Voltage	
Fixed	FX	120 V~ 60 Hz, North America	11
Shape		Location	
Square	SQ	Indoor	I
Round	RD	Outdoor (HomeWorks Resi Products only) ¹	O
No Collar (to be specified later)	XX		
Ceiling Interface		Primary Optic Accessory ^{2,4}	
Flanged	F	None	XX
Flangeless Mud-In	X	Soft Focus Lens ^{2,4}	S1
Flangeless Millwork	M	Frosted Lens ^{2,4}	F1
Ceiling Thickness ⁵		Linear Lens (10×20) ^{2,4}	L1
Thin Ceiling	N	Hex Louver ^{3,4}	H1
Standard Ceiling	S	Secondary Optic Accessory ^{2,4}	
Thick Ceiling	T	None	XX
Deep Ceiling	D	Soft Focus Lens ^{2,4}	S1
Power Consumption		Frosted Lens ^{2,4}	F1
18 W	18	Linear Lens (10×20) ^{2,4}	L1
		Hex Louver ^{3,4}	H1

Trim Exploded View²



¹ D2s are available for residential exterior applications only and must have a trim installed with a lens.
² Maximum of 2 accessories available at once across the optic and trim accessories.
³ When specifying a Hex Louver no additional optic or trim accessory is allowed.
⁴ The addition of accessory lens will reduce lumen output. See Trim/Lens Option Efficiency table on the next page.
⁵ The ceiling thickness option required varies by ceiling interface. See Ceiling Thickness Options table on page 7 for details.

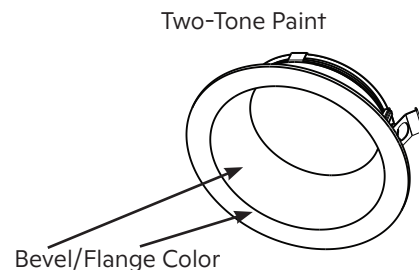
TRIM ORDERING GUIDE

Trim

UN-	D2
Product Line	Series

Shape	Ceiling Interface	Aperture Profile	Trim Finish	Trim Accessory
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Order code: _____



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

TRIM/LENS OPTION EFFICIENCY TABLE

	15 HO	15 LG	25 HO	25 LG	40 HO	40 LG	60 HO	60 LG
Clear	100%	100%	100%	100%	100%	100%	100%	100%
Soft Focus	95%	93%	96%	93%	96%	93%	96%	93%
Frosted	95%	93%	96%	93%	96%	92%	95%	93%
Linear (10x20)	94%	92%	94%	92%	94%	92%	94%	91%
Hex Louver	61%	67%	58%	62%	51%	56%	45%	50%

¹ White finish can be used as a primer for customer selected and applied paint.
² Maximum of 2 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.

COMPONENT ORDERING GUIDE

Replacement Optics

UN-D2	OP	
Product Line	Accessory Type	Beam Angle
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

Optics Accessories

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

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
None	XX

Trim Lens Accessories

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

Product Line	Code
Universal Part - Recessed Downlight	UN-D2
Accessory Type	
Trim	TL
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

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

² Only one optional optical or trim accessory can be used at a time.

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.)

Mounting & Installation Kits

UN-D2

Product Line	Accessory
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Order code: _____

Collar Adapters

UN-D2

Product Line	Collar Adapters	Ceiling Thickness
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Order code: _____

Product Line	Code
Universal Part - Recessed Downlight	UN-D2

Accessory

Millwork Template, Round	MTRD
Millwork Template, Square	MTSQ
Butterfly Brackets & Hanger Bars	MAX
Trim Retainer, Round Mud-In	TRRD
Trim Retainer, Round Millwork	TRRD
Trim Retainer, Square Mud-In	TRSQ
Trim Retainer, Square Millwork	TRSQ

Product Line	Code
Universal Part - Recessed Downlight	UN-D2

Collar Adapters¹

Millwork Round	MCARD
Millwork Square	MCASQ
Mud-In Round	XCARD
Mud-In Square	XCASQ
Flanged Round	FCARD
Flanged Square	FCASQ
Millwork Extender Round	MCERD
Millwork Extender Square	MCESQ
Mud-in Extender Round	XCERD
Mud-in Extender Square	XCESQ

Ceiling Thickness⁴

Thin	N
Standard	S
Thick	T
Deep	D

Ceiling Thickness Options Table

Ceiling Type	Dimensions: in (mm)	Ceiling Thickness (collar type)
Flanged	0.625-1.25 (15.875-31.75)	Standard (S)
	1.3-2.0 (33.02-50.8)	Thick (T)
Flangeless Mud In	0.625-1.0 (15.875-25.4)	Thin (N)
	1.0625-1.375 (27.0-34.9)	Standard (S)
	1.4375-2.0 (36.51-50.8)	Thick (T)
Flangeless Millwork	0.625-0.9375 (15.875-23.8125)	Thin (N)
	1.0-1.3125 (25.4-33.34)	Standard (S)
	1.375-1.6875 (34.9-42.8625)	Thick (T)
	1.75-2.0 (44.45-50.8)	Deep (D)

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

¹ Ceiling installation cannot begin until collar adapter is installed.

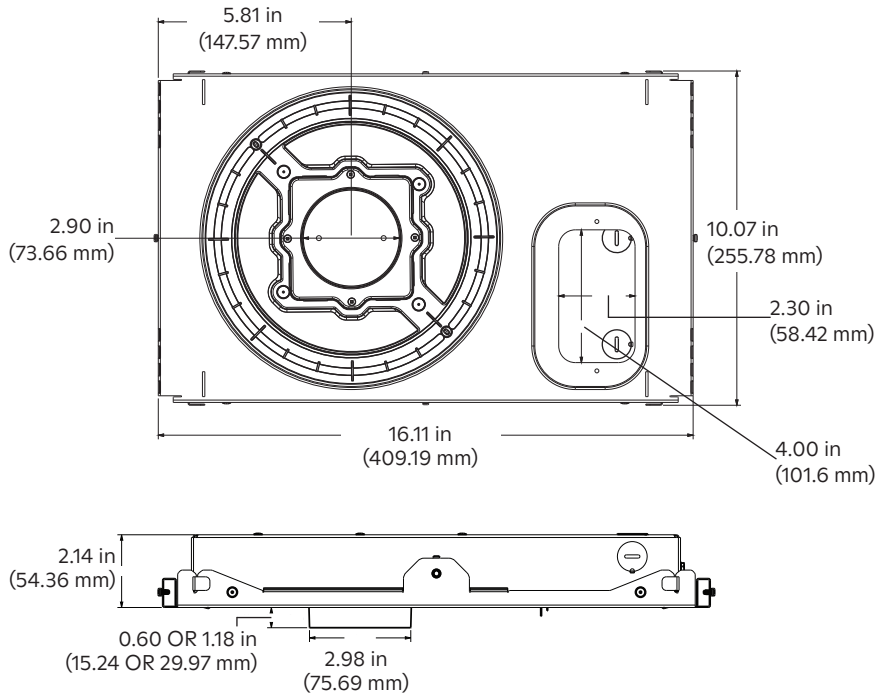
² Mud-in trim retainer supplied with mud-in collar adapter.

³ Millwork trim retainer supplied with millwork trim to ensure color match.

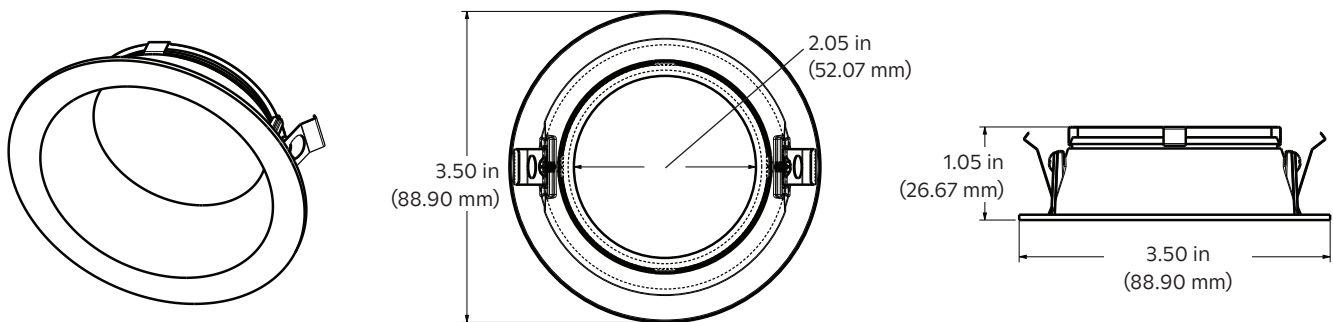
⁴ The ceiling thickness option required varies by ceiling interface. See Ceiling Thickness Options table above for details.

PRODUCT DIMENSIONS

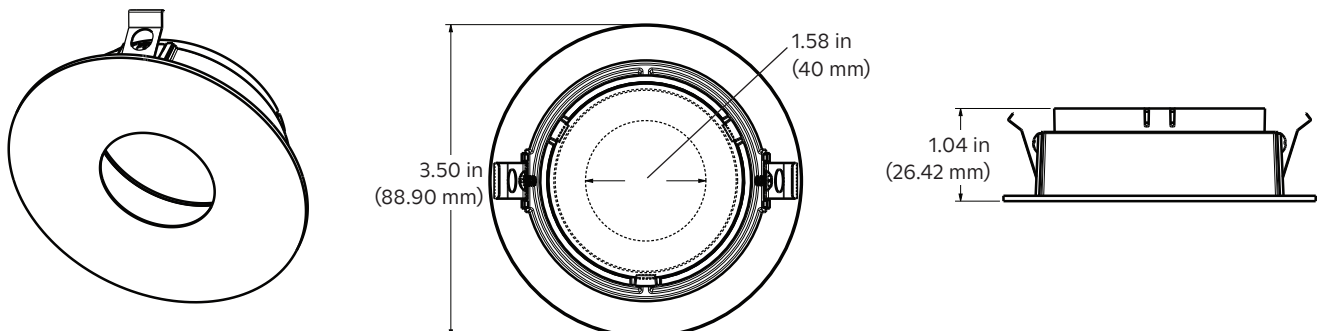
Flanged Housing, Round



Flanged Bevel Trim, Round

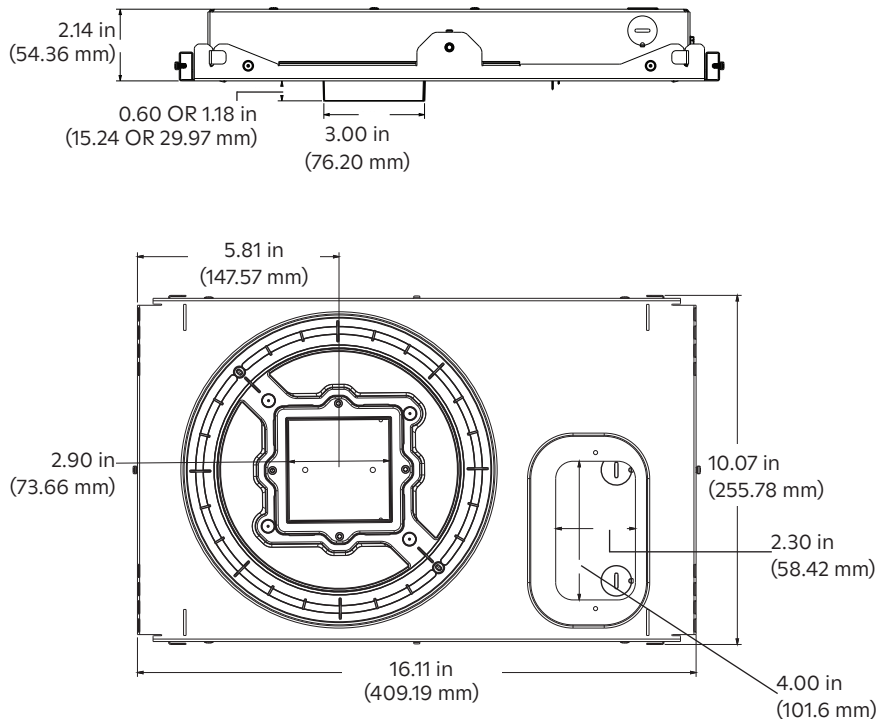


Flanged Pinhole Trim, Round

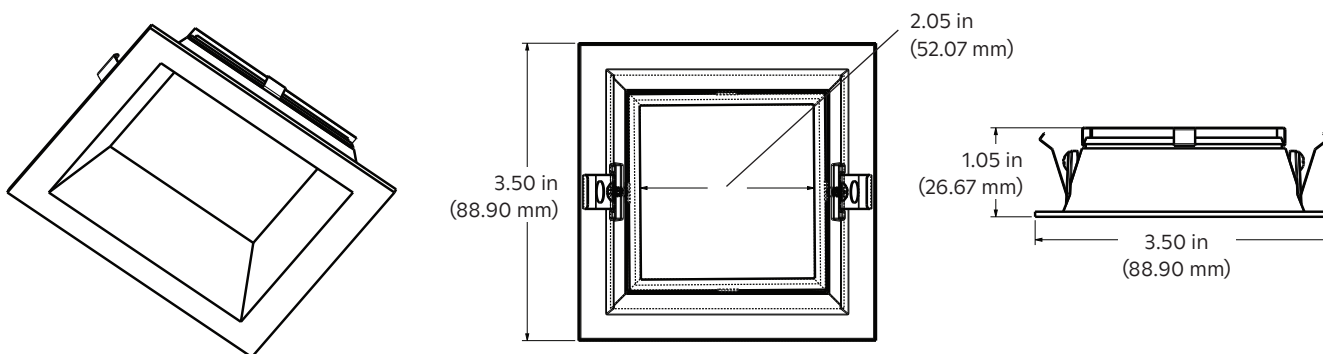


PRODUCT DIMENSIONS (cont.)

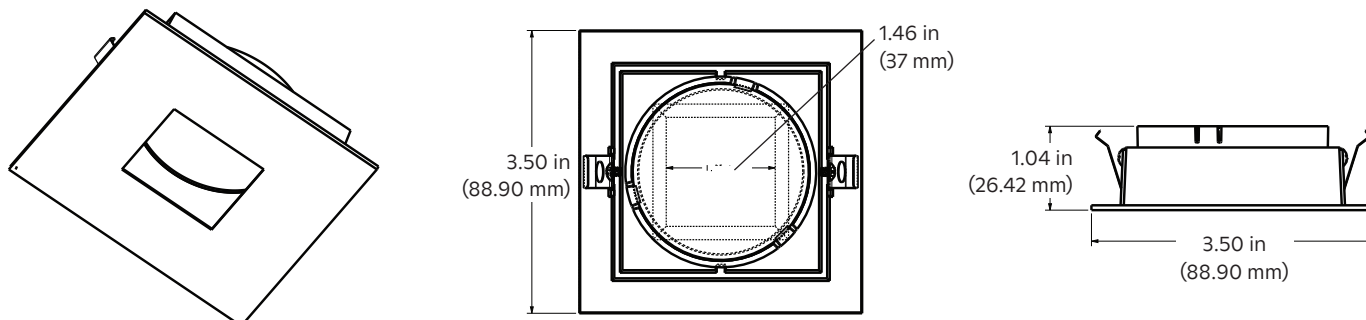
Flanged Housing, Square



Flanged Bevel Trim, Square

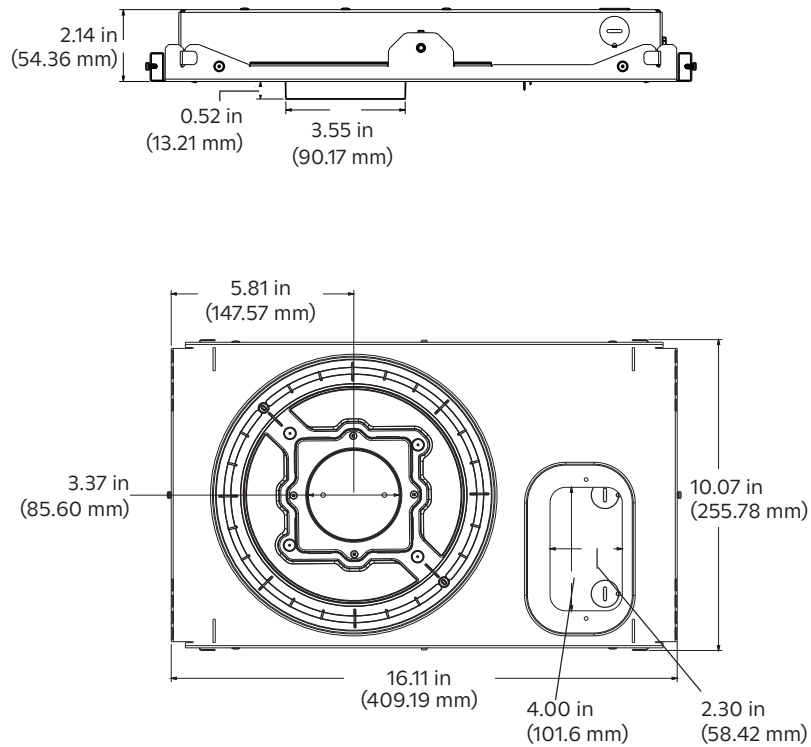


Flanged Pinhole Trim, Square

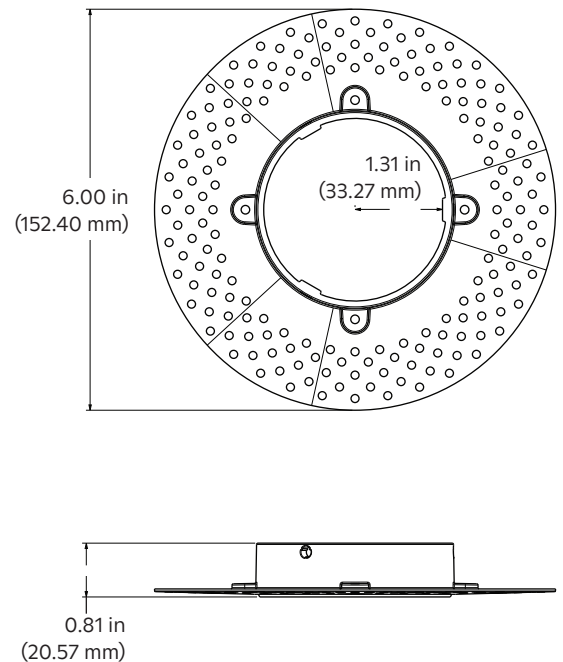


PRODUCT DIMENSIONS (cont.)

Flangeless Mud-In Housing, Round

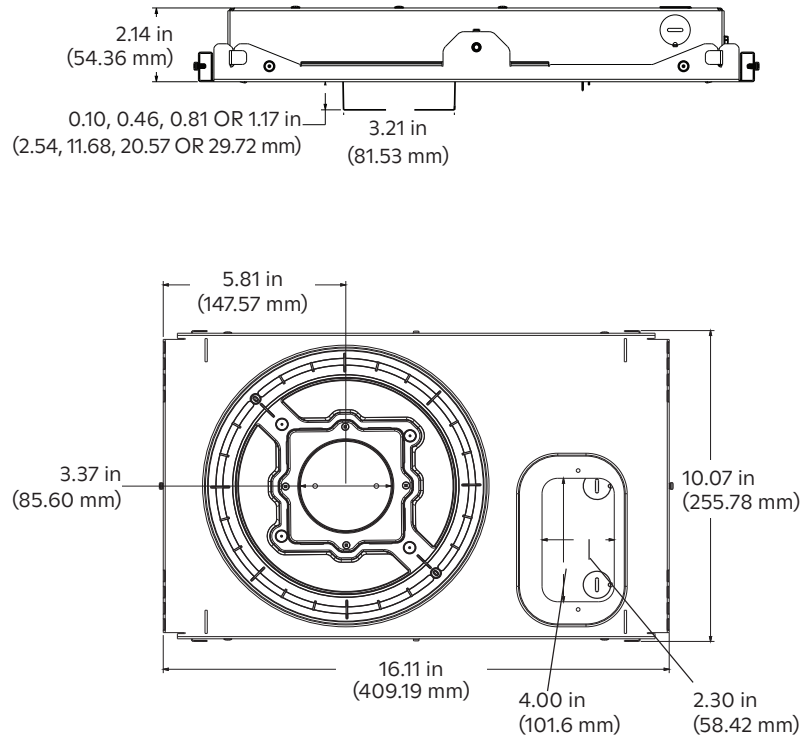


Flangeless Mud-In Trim Retainer, Round

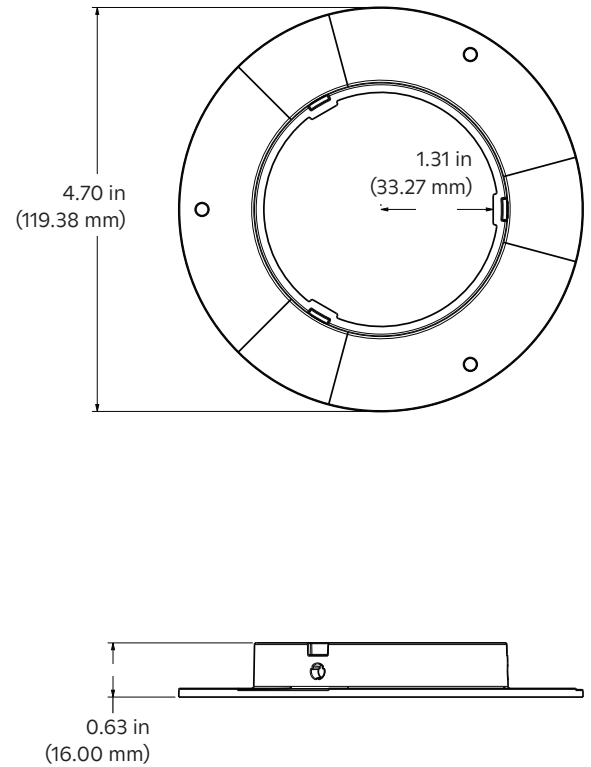


PRODUCT DIMENSIONS (cont.)

Flangeless Millwork Housing, Round

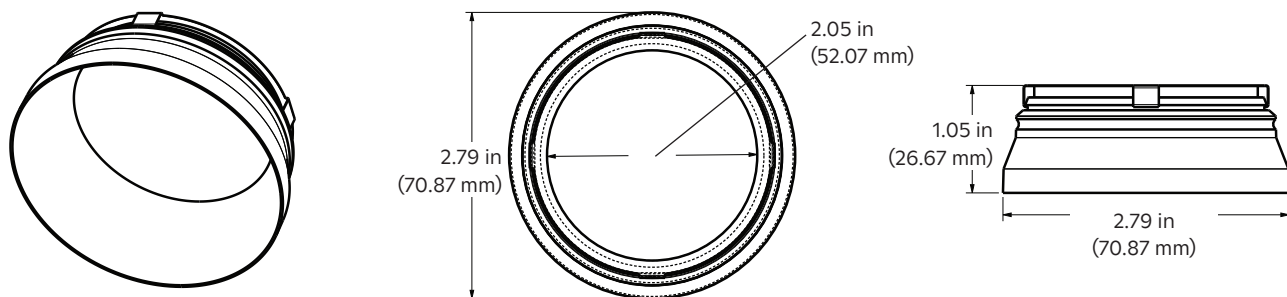


Flangeless Millwork Trim Retainer, Round

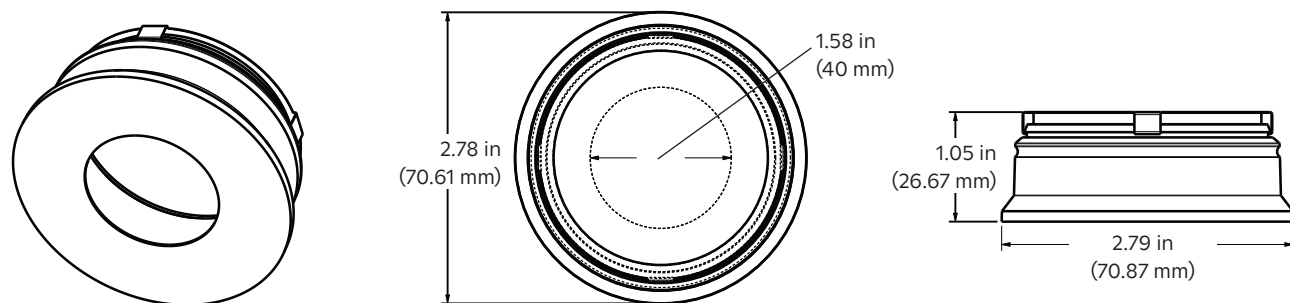


PRODUCT DIMENSIONS (cont.)

Flangeless Bevel Trim, Round

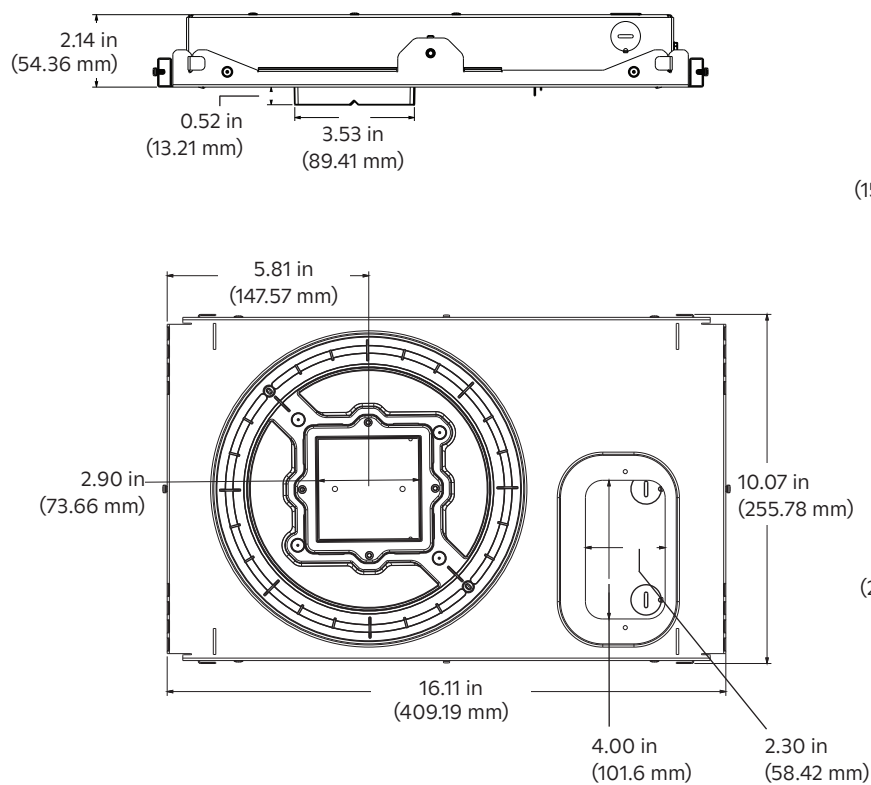


Flangeless Pinhole Trim, Round

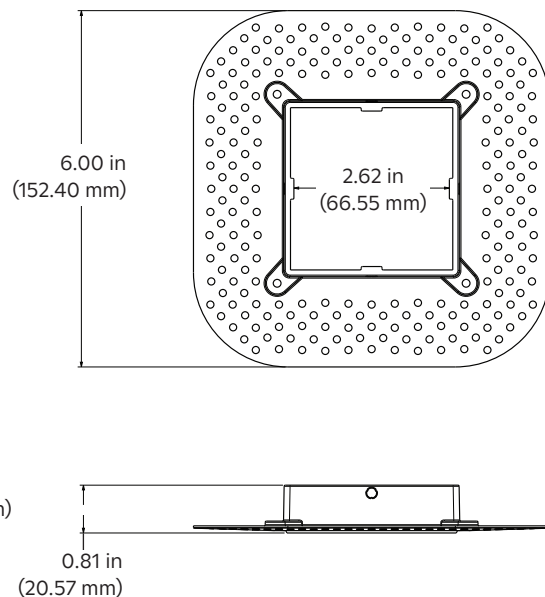


PRODUCT DIMENSIONS (cont.)

Flangeless Mud-In Housing, Square

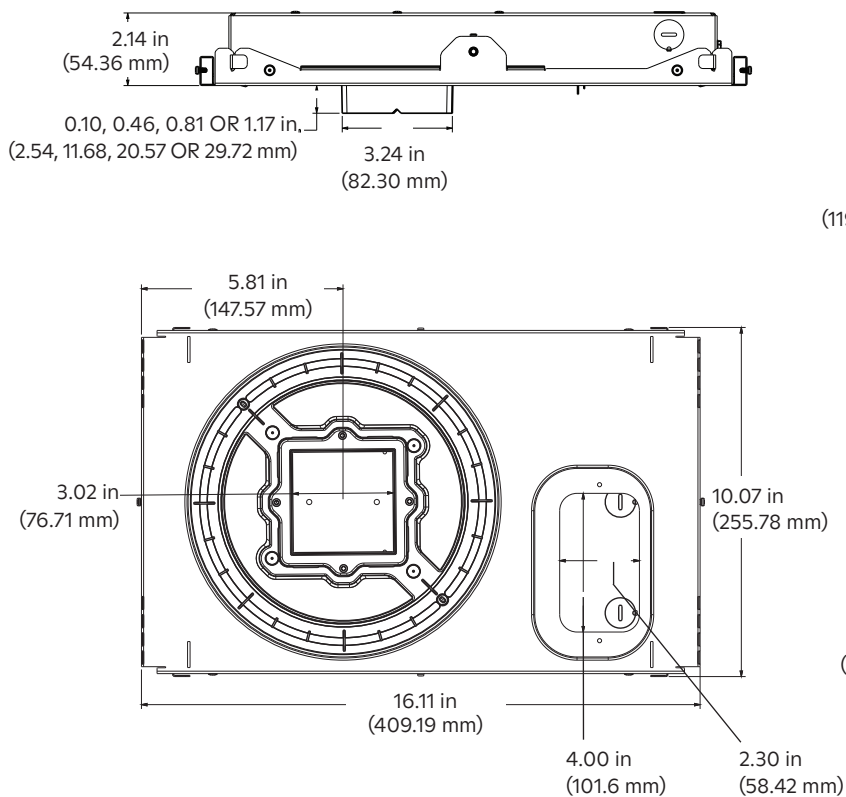


Flangeless Mud-In Trim Retainer, Square

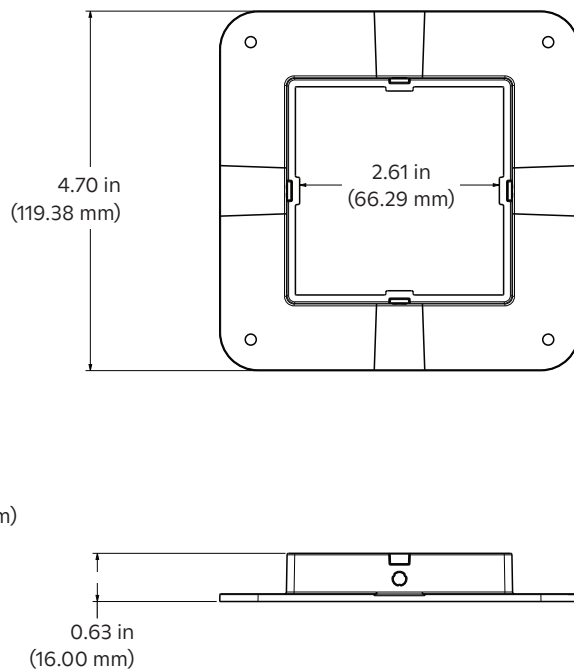


PRODUCT DIMENSIONS (cont.)

Flangeless Millwork Housing, Square

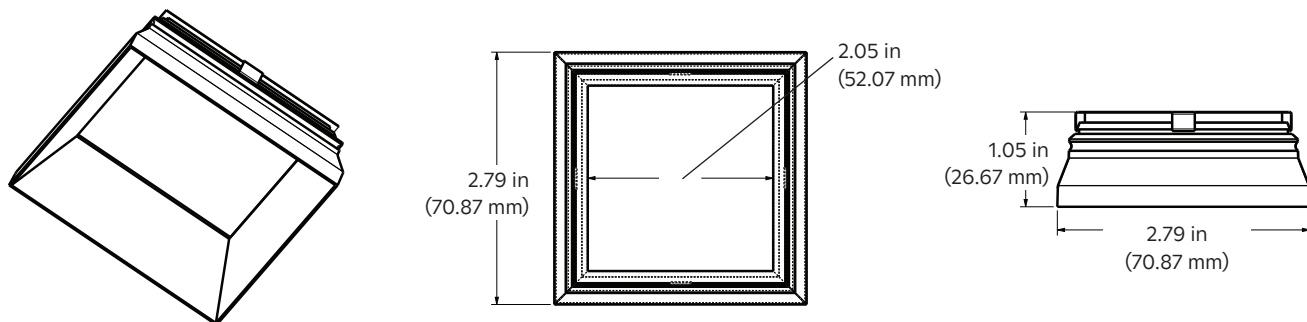


Flangeless Millwork Trim Retainer, Square

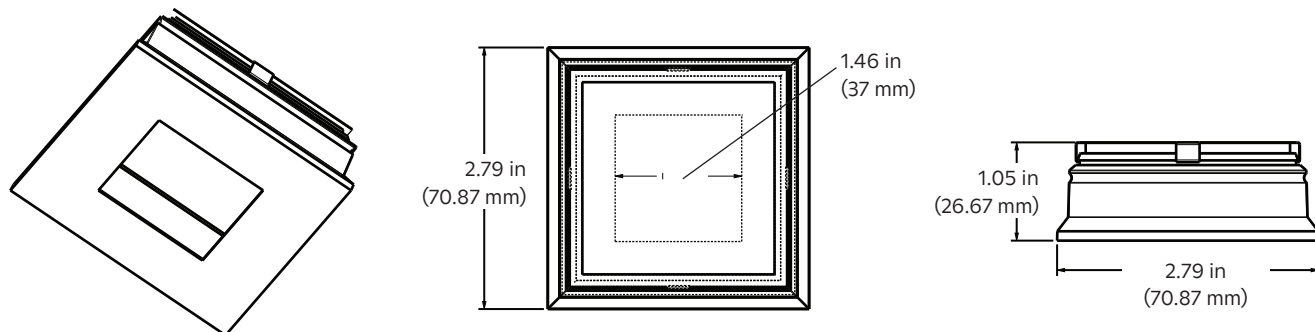


PRODUCT DIMENSIONS (cont.)

Flangeless Bevel Trim, Square



Flangeless Pinhole Trim, Square



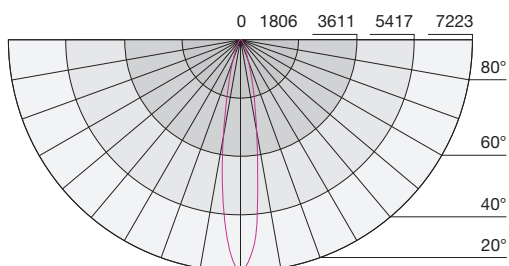
PHOTOMETRIC DATA¹

Beam Angle: 15° Spot, Low Glare

Model Number	Wattage	Delivered Lumens	CBCP
XX_D2-FSFXRDFS18GT15L-XXXX	18 W	1140	7223

Foot-candles	Beam Dia.
200.6	6 ft (1.8 m)
112.9	8 ft (2.4 m)
72.2	10 ft (3 m)
50.2	12 ft (3.7 m)
36.8	14 ft (4.3 m)

Distance From Light

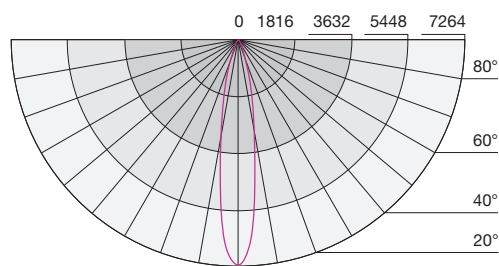


Beam Angle: 15° Spot, High Output

Model Number	Wattage	Delivered Lumens	CBCP
XX-D2-FSFXRDFS18GT15H-XXXX	18 W	1230	7264

Foot-candles	Beam Dia.
201.8	6 ft (1.8 m)
113.5	8 ft (2.4 m)
72.6	10 ft (3 m)
50.4	12 ft (3.7 m)
37.1	14 ft (4.3 m)

Distance From Light

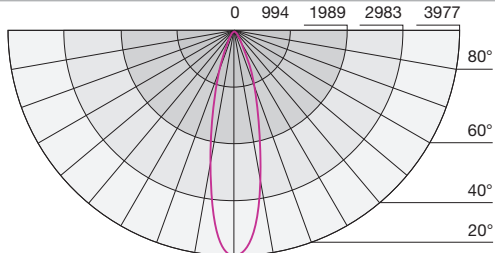


Beam Angle: 25° Spot, Low Glare

Model Number	Wattage	Delivered Lumens	CBCP
XX-D2-FSFXRDFS18GT25L-XXXX	18 W	1160	3977

Foot-candles	Beam Dia.
108.1	6 ft (1.8 m)
60.8	8 ft (2.4 m)
38.9	10 ft (3 m)
27.0	12 ft (3.7 m)
19.9	14 ft (4.3 m)

Distance From Light

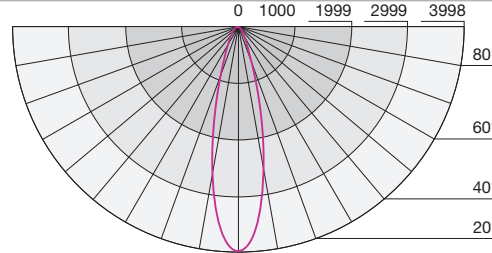


Beam Angle: 25° Spot, High Output

Model Number	Wattage	Delivered Lumens	CBCP
XX-D2-FSFXRDFS18GT25H-XXX	18 W	1240	3998

Foot-candles	Beam Dia.
108.9	6 ft (1.8 m)
61.3	8 ft (2.4 m)
39.2	10 ft (3 m)
27.2	12 ft (3.7 m)
20.0	14 ft (4.3 m)

Distance From Light



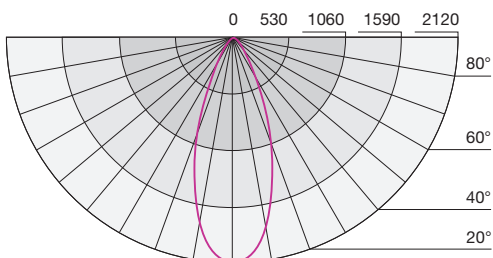
¹ All data is simulated to represent the typical performance expected with the following parameters: 1 in (25.4 mm) white trim, with light engine at nadir, at 3000 K, 25 °C ambient, 100% power input, default vibrancy, unless otherwise stated.

PHOTOMETRIC DATA¹ (cont.)

Beam Angle: 40° Wide Flood, Low Glare

Model Number	Wattage	Delivered Lumens	CBCP
XX-D2-FSFXRDFS18GT40L-XXXX	18 W	1118	2120

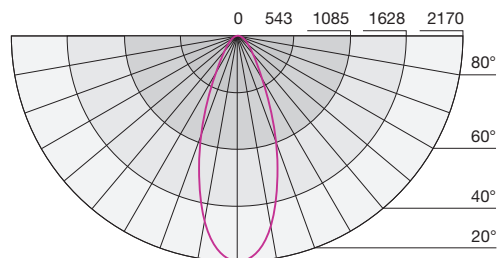
Foot-candles	Beam Dia.
58.9	6 ft (1.8 m)
33.1	8 ft (2.4 m)
21.2	10 ft (3 m)
14.7	12 ft (3.7 m)
10.8	14 ft (4.3 m)



Beam Angle: 40° Wide Flood, High Output

Model Number	Wattage	Delivered Lumens	CBCP
XX-D2-FSFXRDFS18GT40H-XXXX	18 W	1301	2170

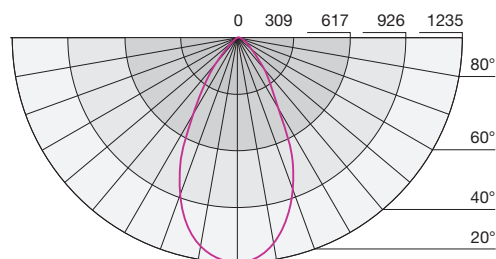
Foot-candles	Beam Dia.
60.2	6 ft (1.8 m)
33.9	8 ft (2.4 m)
21.7	10 ft (3 m)
15.1	12 ft (3.7 m)
11.1	14 ft (4.3 m)



Beam Angle: 60° Very Wide Flood, Low Glare

Model Number	Wattage	Delivered Lumens	CBCP
XX-D2-FSFXRDFS18GT60L-XXXX	18 W	1096	1124.7

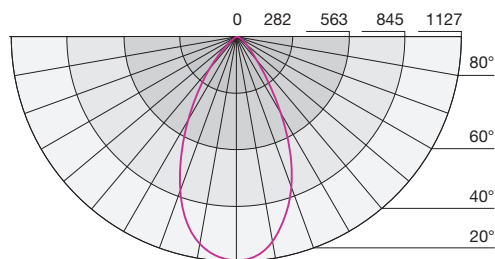
Foot-candles	Beam Dia.
31.2	6 ft (1.8 m)
17.5	8 ft (2.4 m)
11.2	10 ft (3 m)
7.8	12 ft (3.7 m)
5.7	14 ft (4.3 m)



Beam Angle: 60° Very Wide Flood, High Output

Model Number	Wattage	Delivered Lumens	CBCP
XX-D2-FSFXRDFS18GT60H-XXXX	18 W	1231	1127

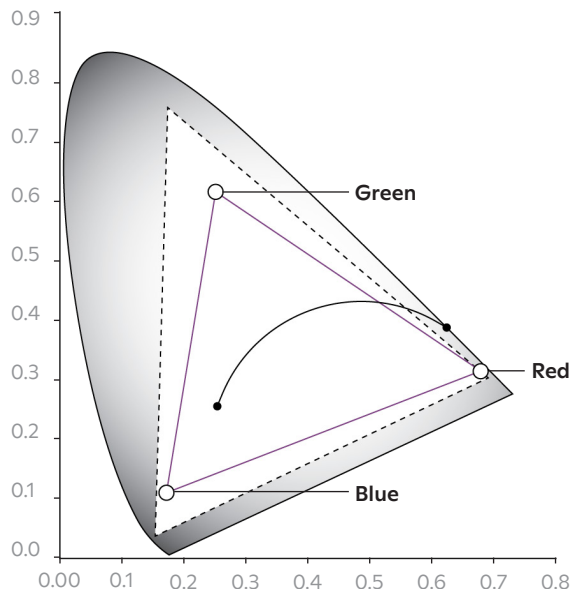
Foot-candles	Beam Dia.
32.1	6 ft (1.8 m)
18.1	8 ft (2.4 m)
11.5	10 ft (3 m)
8.0	12 ft (3.7 m)
5.9	14 ft (4.3 m)



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 D2 LED Downlight can easily be commissioned into Lutron HomeWorks or Athena systems. 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.

D2 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 2,700 K to 5,000 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.

Warranty: Ketra's light source is warrantied to be free from defects in material and workmanship for five (5) years or 25,000 hours from date of shipment, whichever is less.

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 1,400 K to 10,000 K Correlated Color Temperature (CCT).

¹ Color point maintenance not guaranteed in the expanded gamut or while operating at ambient temperatures between -13 to 32 °F (-25 to 0 °C).

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