

D2 Fixture

PRODUCT DESCRIPTION

Ketra full spectrum D2 recessed LED downlights are available in fixed, adjustable, and wall-wash options to complete any lighting design project.

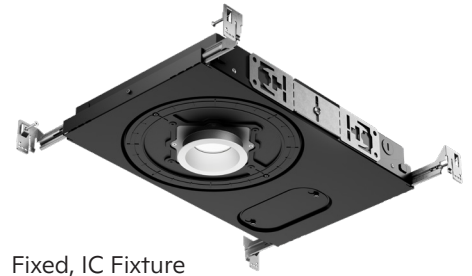
FEATURES

High Def Palette—covers a wide range of 16.7 million colors, including pastels, saturated colors and high CRI whites spanning from 1,400K to 10,000K.

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



Adjustable, IC Fixture

OPTIONS

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

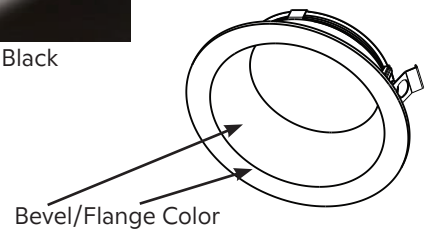
Flanged Trim Finish Options

White	Black	Silver	Bronze	Silver / White	Black / White	Gloss Black / White

Flangeless Trim Finish Options

White	Black	Silver	Bronze	Gloss Black

Two-Tone Paint



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 (R9 >90) from 2,700K to 5,000K
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	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
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 residential enclosed/covered patio applications. Trim lens required
Warranty	5 year fixture, LED and dimming warranty

Mechanical

Mounting Options	Hanger Bars/ Butterfly Brackets
Field Replaceable Optics	Yes
Field Replaceable Light Engine	Yes
Field Replaceable Power Supply	Yes
Fixture Weight	Fixed: 5.7 lb (2.59 kg) Adjustable: 6.2 lb (2.81 kg)
Housing Material	Pre-painted Steel, Polymer
Lens Material	Plastic
Field Fixture Type Convertibility	Adjustable Fixture can be used to achieve same features of an Adjustable and Fixed Fixture only. Fixed Fixture can only be used as a Fixed Fixture. Wall Wash Fixture can only be used as a Wall Wash Fixture.

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, default vibrancy, 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.

SPECIFICATIONS¹ (continued)

Dimensions

Ceiling Hole Diameter/Width	3.25 in (82.55 mm) flanged; 3.75 in (95.25 mm) flangeless mud-in; 2.79 in (70.87 mm) flangeless millwork
Ceiling Thickness (min-max)	0.625 – 2 in (15.8 – 50.8 mm)
Modular Emitter/LED Module Vertical Adjustment	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	Adjustable: Emitter tilt to 40 degree Emitter full 365 degree rotation Collar 95 degree rotation Wall Wash: Emitter full 365 degree rotation Collar 95 degree rotation Fixed: Collar 95 degree rotation
Housing Height	Adjustable: 3.48 in (88.39 mm) Fixed & Wall Wash: 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, default vibrancy, 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.

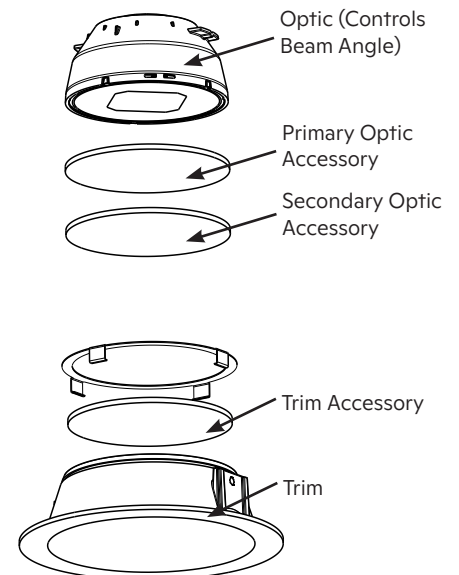
Housing

D2-		FS				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
Commercial (Athena compatible)	CM-	CCX (Clear Connect-Type X)	GT
Residential (HomeWorks compatible)	HW-	Beam Angle	
		Spot (15°)	15
		Narrow Flood (25°)	25
		Flood (40°)	40
		Wide Flood (60°)	60
		Wall Wash ¹	WW
Series	D2-	Optic Style	
D2 Fixture		Low Glare	L
LED Type	FS	High Output	H
Ketra		Wall Wash ¹	W
Fixture Type		Region/Voltage	
Adjustable	AD	120 V~ 60 Hz, North America	11
Fixed	FX	Location	
Wall Wash ¹	WW	Indoor	I
Shape		Outdoor (HomeWorks Resi Products only) ²	O
Square	SQ	Primary Optic Accessory ^{3,5}	
Round	RD	Soft Focus Lens ^{3,5}	S1
No Collar (to be specified later)	XX	Frosted Lens ^{3,5}	F1
Ceiling Interface		Linear Lens ^{3,5}	L1
Flanged	F	Hex Louver ^{4,5}	H1
Flangeless Mud-In	X	None	XX
Flangeless Millwork	M	Secondary Optic Accessory ^{3,5}	
Ceiling Thickness		Soft Focus Lens ^{3,5}	S1
Standard Ceiling 0.625 - 1.25 in (15.9 - 21.75 mm)	S	Frosted Lens ^{3,5}	F1
Thick Ceiling 1.3 - 2.0 in (33.0 - 50.8 mm)	T	Linear Lens ^{3,5}	L1
Power Consumption		Hex Louver ^{4,5}	H1
18 W	18	None	XX

Optic & Trim Exploded View ³



1 Wall Wash fixture is unique and cannot be converted to other fixture types and vice versa.
 2 D2s are available for residential exterior applications only and must have a trim installed with a lens.
 3 Maximum of 2 accessories available at once across the optic and trim accessories.
 4 When specifying a Hex Louver no additional optic or trim accessory is allowed.
 5 The addition of accessory lens will reduce lumen output. Additional information coming soon.

TRIM ORDERING GUIDE

Trim

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

Order code: _____

Product Line	Code
Universal	UN-

Series	
D2 Fixture	D2

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

Aperture Profile	
Bevel	B
Pinhole	P
Wall Wash ²	W

Trim Finish	
White ¹	WH
Black	BK
Gloss Black	GB
Bronze	RB
Silver	SR
Silver/White	SW
Black/White	BW
Gloss Black/White	GW

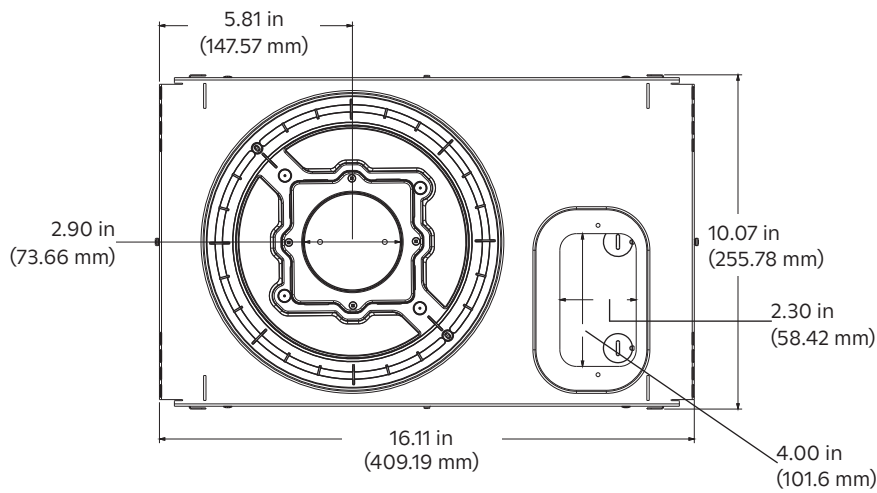
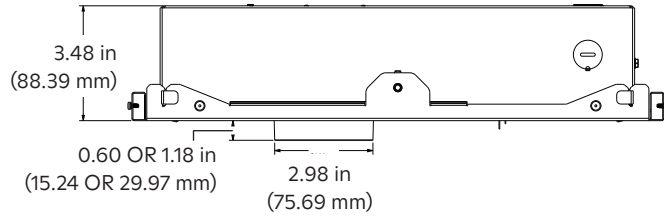
Trim Accessory ^{2,4}	
Soft Focus Lens ^{2,4}	S1
Frosted Lens ^{2,4}	F1
Linear Lens ^{2,4}	L1
Clear Lens ^{2,4}	C1
Wall Wash Lens ^{3,4}	WW
None	XX

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 Wall Wash fixture is unique and cannot be converted to other fixture types and vice versa.
 4 The addition of accessory lens will reduce lumen output. Additional information will be coming soon

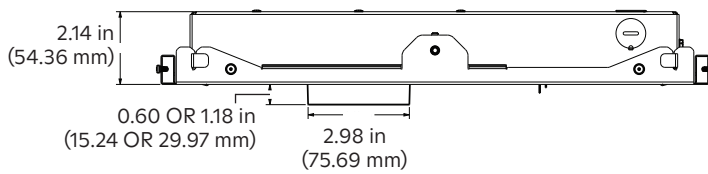
PRODUCT DIMENSIONS

Flanged Housing, Round

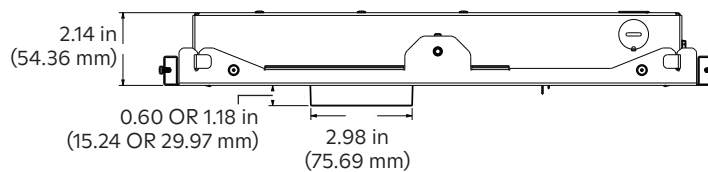
Adjustable



Fixed

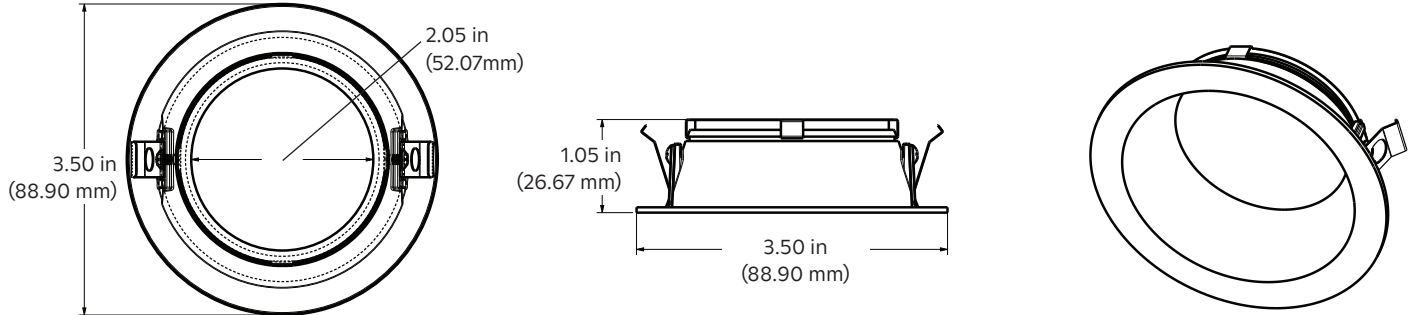


Wall Wash

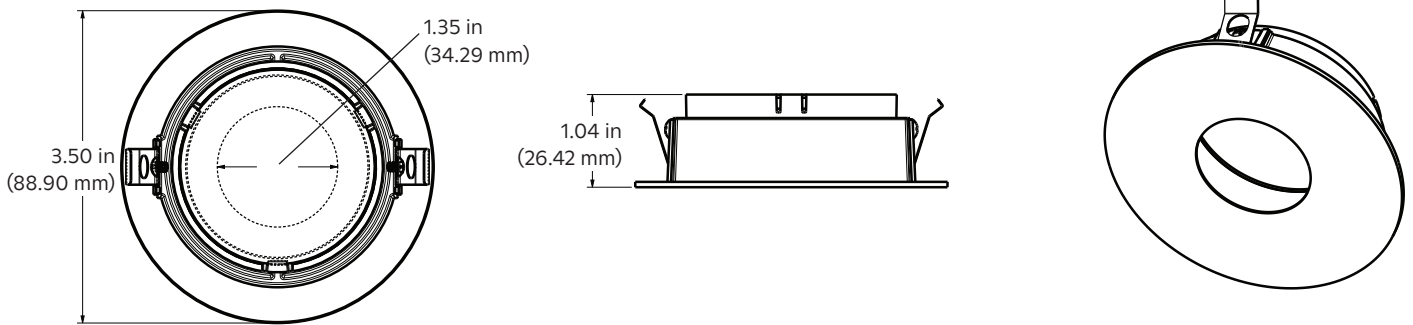


PRODUCT DIMENSIONS (cont.)

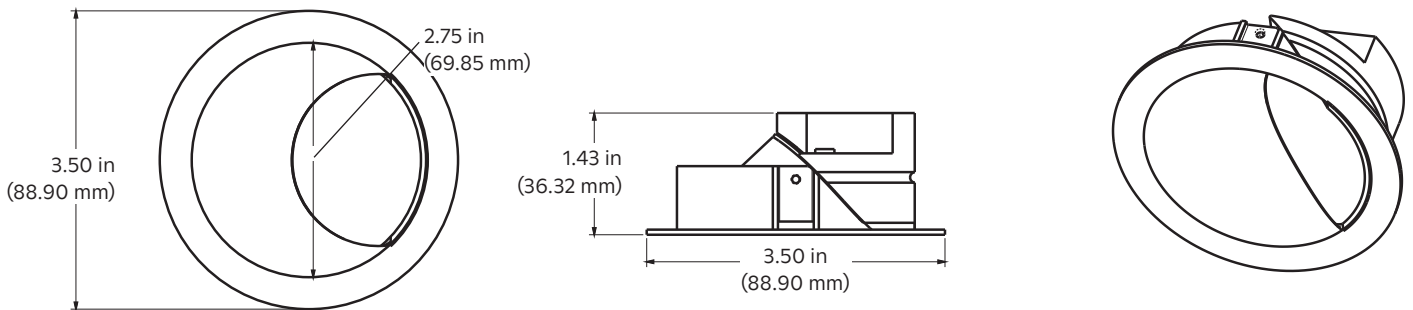
Flanged Bevel Trim, Round



Flanged Pinhole Trim, Round



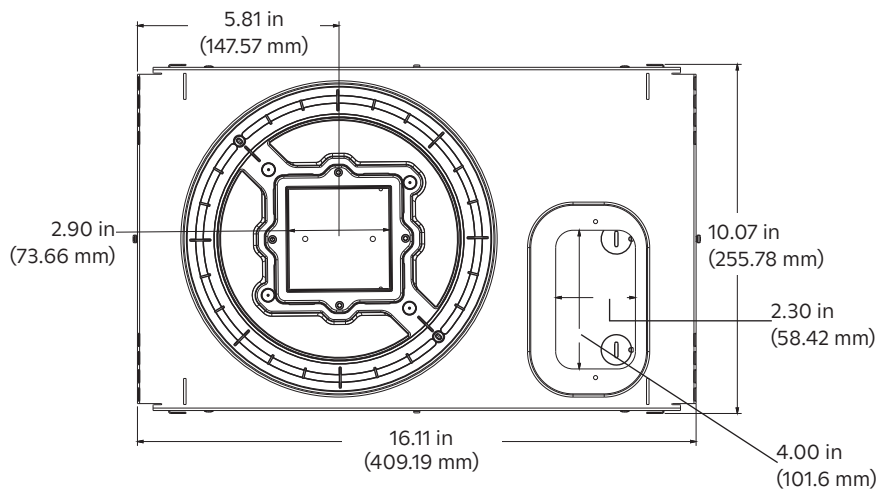
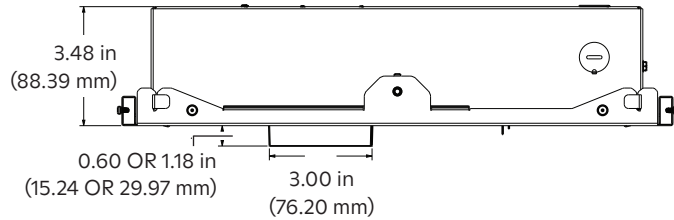
Flanged Wall Wash Trim, Round



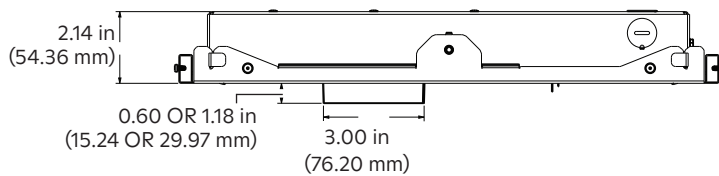
PRODUCT DIMENSIONS (cont.)

Flanged Housing, Square

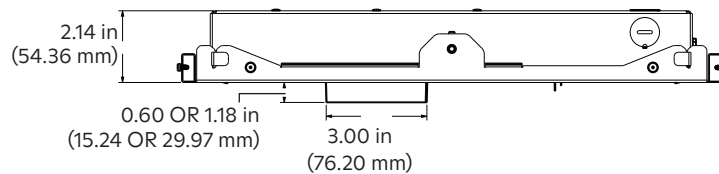
Adjustable



Fixed

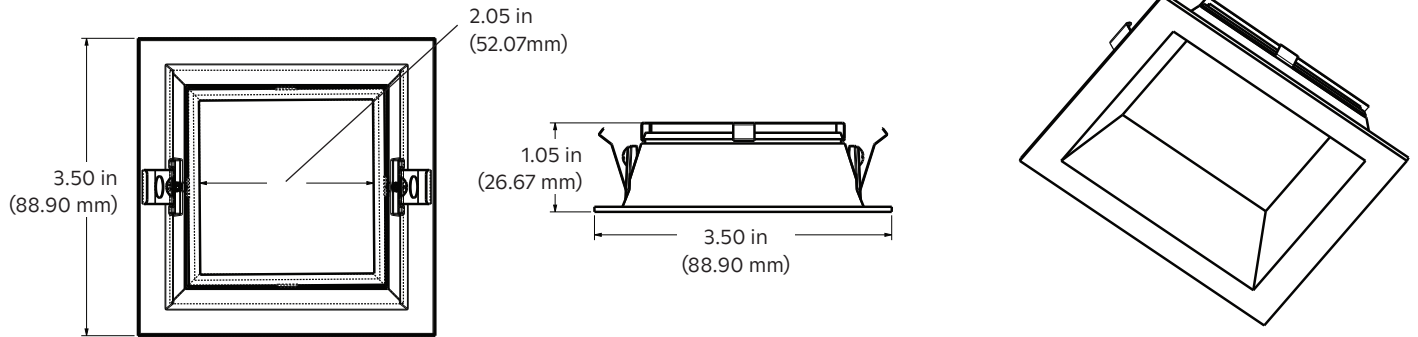


Wall Wash

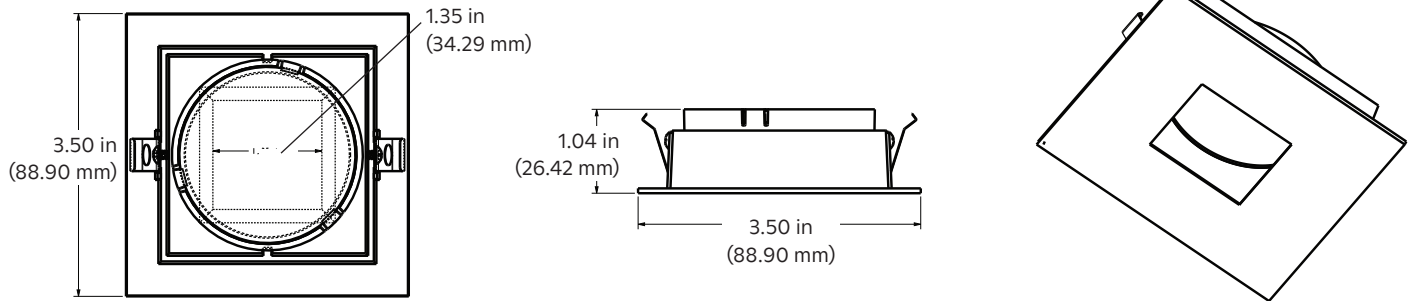


PRODUCT DIMENSIONS (cont.)

Flanged Bevel Trim, Square



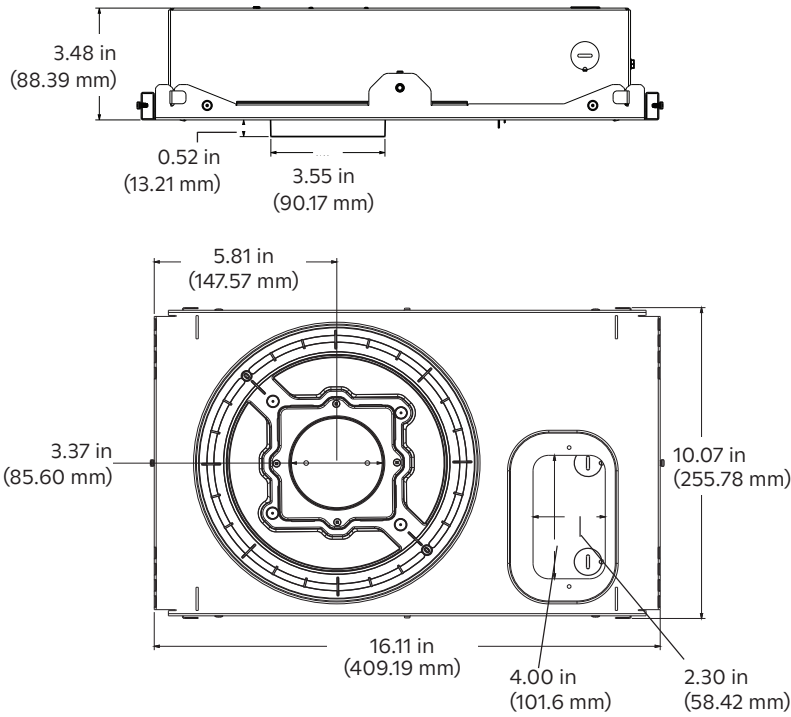
Flanged Pinhole Trim, Square



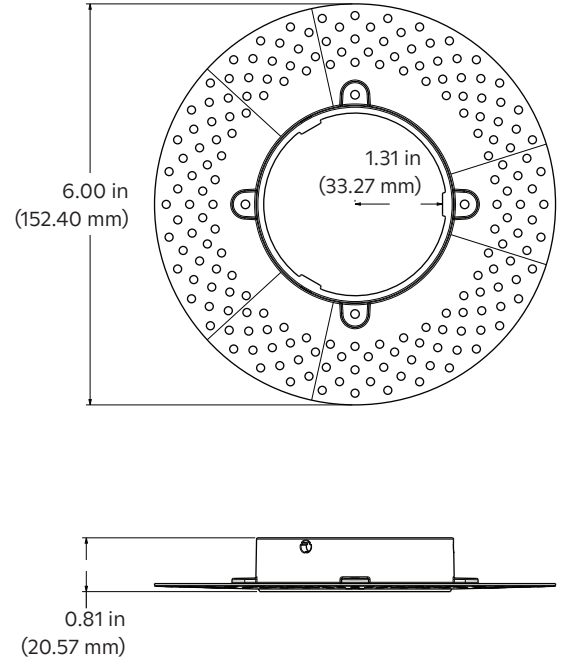
PRODUCT DIMENSIONS (cont.)

Flangeless Mud-In Housing, Round

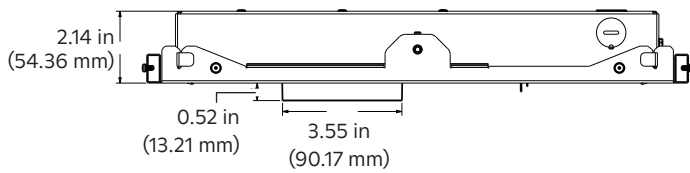
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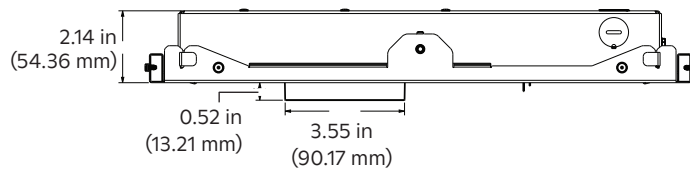
Flangeless Mud-In Trim Retainer, Round



Fixed



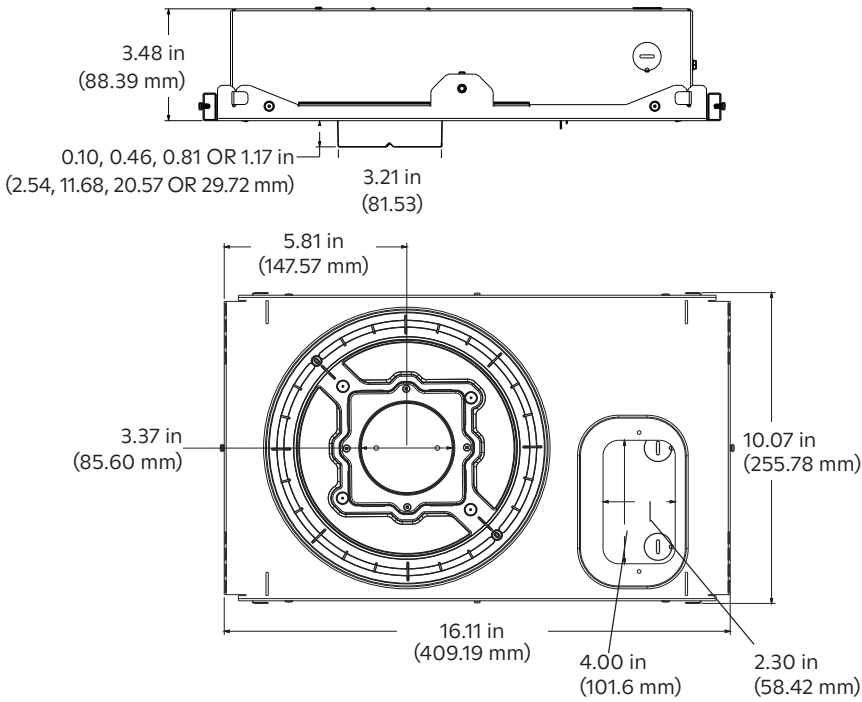
Wall Wash



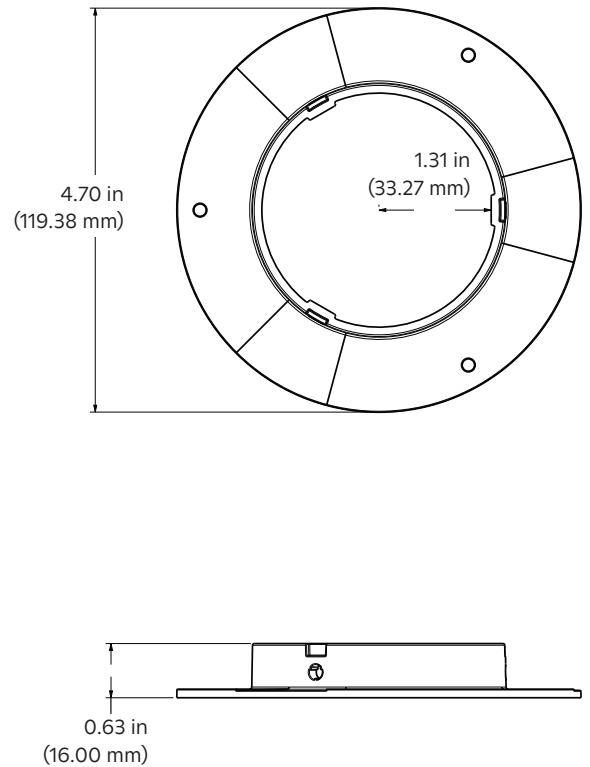
PRODUCT DIMENSIONS (cont.)

Flangeless Millwork Housing, Round

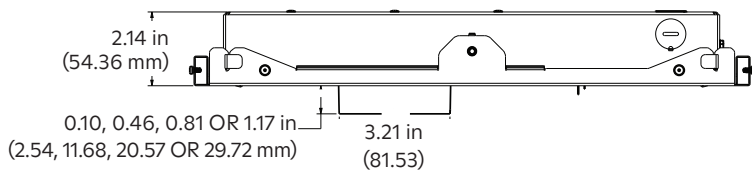
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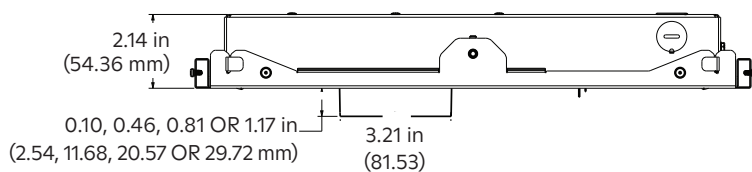
Flangeless Millwork Trim Retainer, Round



Fixed

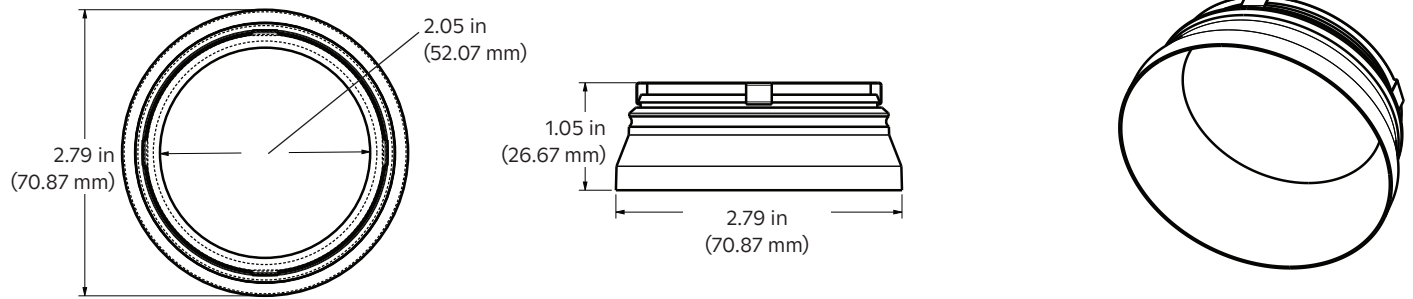


Wall Wash

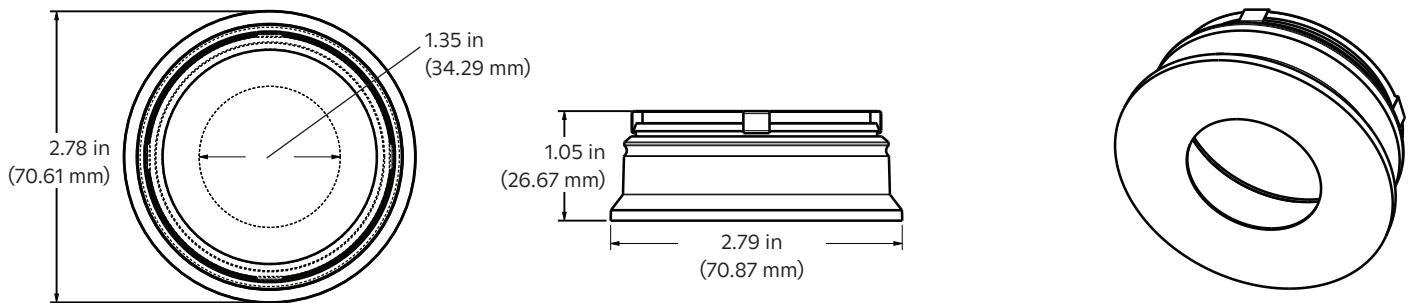


PRODUCT DIMENSIONS (cont.)

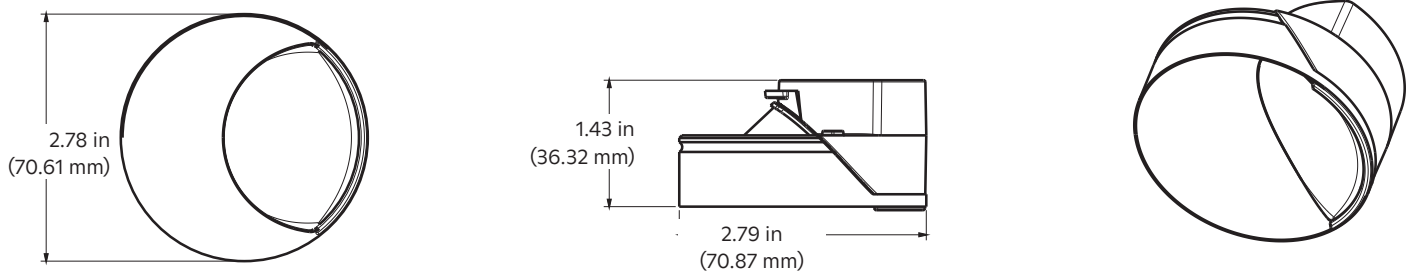
Flangeless Bevel Trim, Round



Flangeless Pinhole Trim, Round



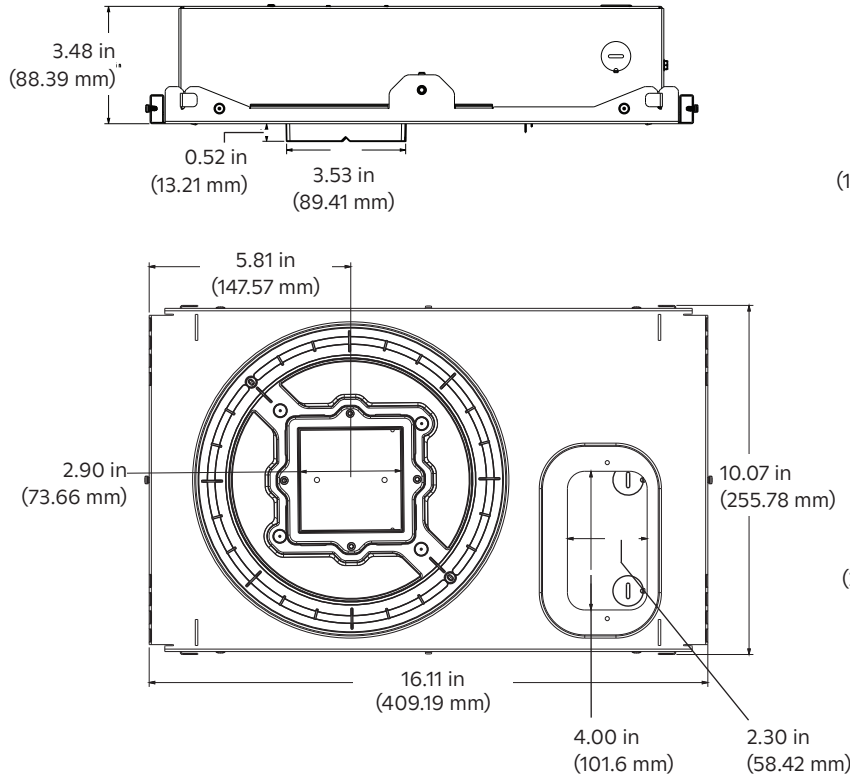
Flangeless Wall Wash Trim, Round



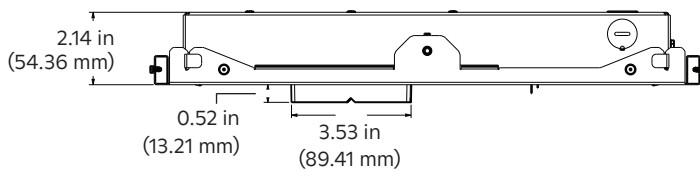
PRODUCT DIMENSIONS (cont.)

Flangeless Mud-In Housing, Square

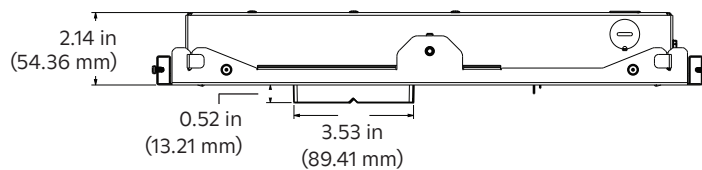
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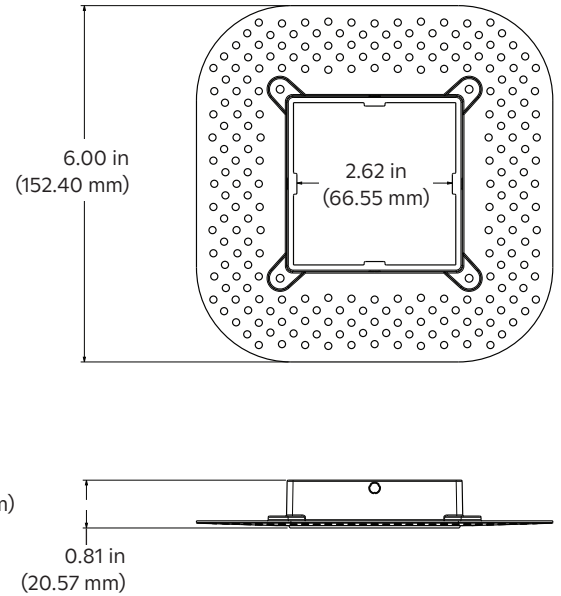
Fixed



Wall Wash

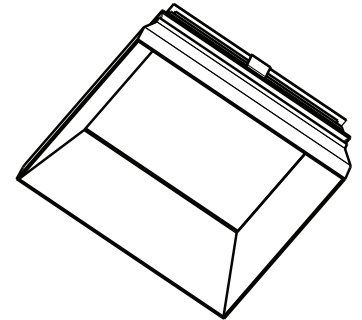
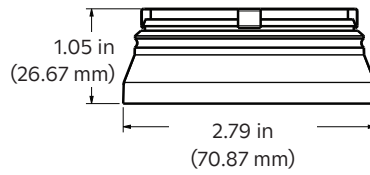
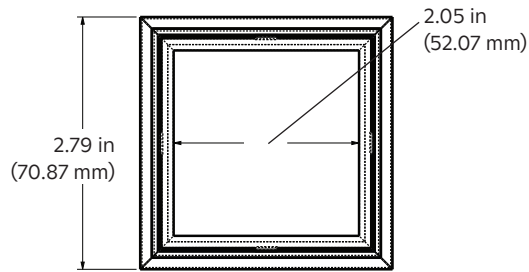


Flangeless Mud-In Trim Retainer, Square

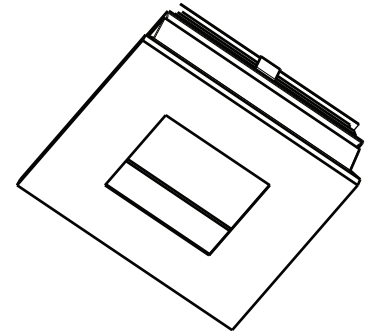
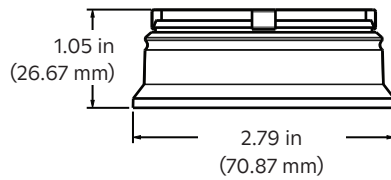
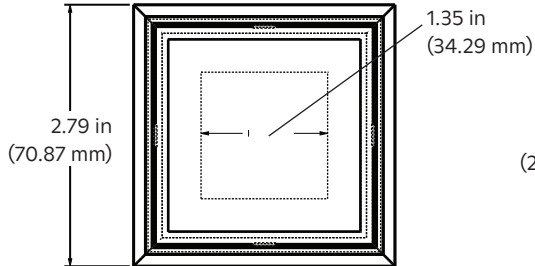


PRODUCT DIMENSIONS (cont.)

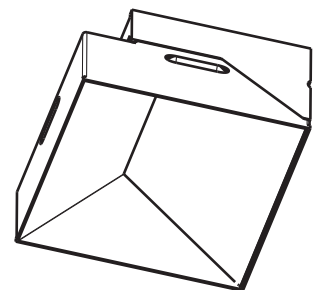
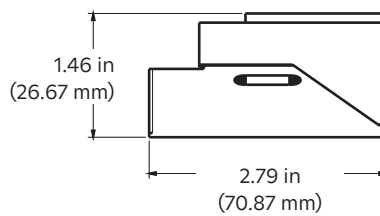
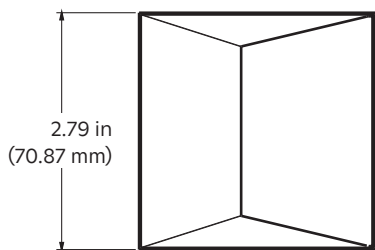
Flangeless Bevel Trim, Square



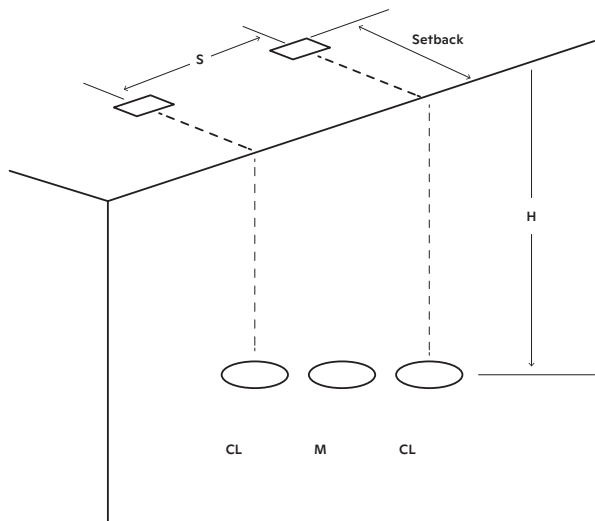
Flangeless Pinhole Trim, Square



Flangeless Wall Wash Trim, Square



PLACEMENT GUIDE FOR MULTIPLE WALL WASH UNITS



Typical Footcandles Measured on the Wall

Distance from Ceiling (H)	2 ft (0.6 m) from wall ("Setback")			2 ft (0.6 m) on Center (S)			3 ft (0.9 m) on Center (S)			4 ft (1.2 m) on Center (S)		
	CL	M	CL	CL	M	CL	CL	M	CL	CL	M	CL
1 ft (0.305 m)	42	40	42	32	22	32	30	12	30	30	12	30
2 ft (0.609 m)	45	46	45	33	28	33	29	16	29	29	16	29
3 ft (0.914 m)	37	37	37	26	24	26	22	16	22	22	16	22
4 ft (1.219 m)	28	29	28	20	19	20	17	13	17	17	13	17
5 ft (1.524 m)	21	22	21	15	15	15	12	10	12	12	10	12
6 ft (1.828 m)	17	17	17	12	12	12	10	9	10	10	9	10
7 ft (2.133 m)	13	13	13	9	9	9	7	7	7	7	7	7
8 ft (2.438 m)	10	10	10	7	7	7	6	6	6	6	6	6
9 ft (2.743 m)	8	8	8	6	6	6	5	5	5	5	5	5
10 ft (3.048 m)	7	7	7	5	5	5	4	4	4	4	4	4

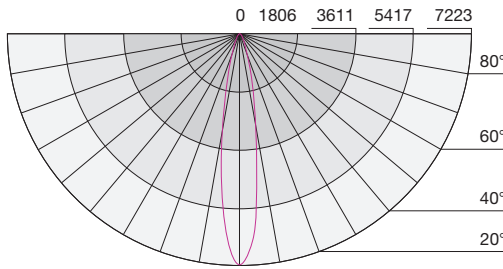
Distance from Ceiling (H)	3 ft (0.9 m) from wall ("Setback")			2 ft (0.6 m) on Center (S)			3 ft (0.9 m) on Center (S)			4 ft (1.2 m) on Center (S)		
	CL	M	CL	CL	M	CL	CL	M	CL	CL	M	CL
1 ft (0.305 m)	18	18	18	12	12	12	10	7	10	10	7	10
2 ft (0.609 m)	28	29	28	20	19	20	16	13	16	16	13	16
3 ft (0.914 m)	29	29	29	20	20	20	16	14	16	16	14	16
4 ft (1.219 m)	25	25	25	18	18	18	14	13	14	14	13	14
5 ft (1.524 m)	21	21	21	15	15	15	12	11	12	12	11	12
6 ft (1.828 m)	18	18	18	13	13	13	10	10	10	10	10	10
7 ft (2.133 m)	15	14	15	11	11	11	8	8	8	8	8	8
8 ft (2.438 m)	12	12	12	9	9	9	7	7	7	7	7	7
9 ft (2.743 m)	10	10	10	8	8	8	6	6	6	6	6	6
10 ft (3.048 m)	9	8	9	7	7	7	5	5	5	5	5	5

PHOTOMETRIC DATA¹

Beam Angle: 15° Spot, Low Glare

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

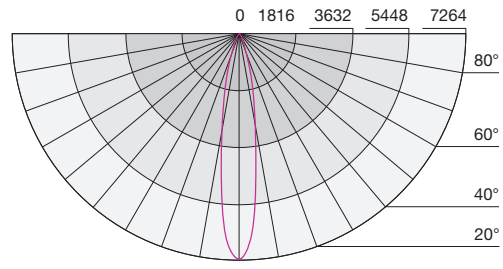
Foot-candles	Distance From Light	Beam Dia.
200.6	6 ft (1.8 m)	1.58 ft (0.48 m)
112.9	8 ft (2.4 m)	2.11 ft (0.64 m)
72.2	10 ft (3 m)	2.63 ft (0.80 m)
50.2	12 ft (3.7 m)	3.16 ft (0.96 m)
36.8	14 ft (4.3 m)	3.69 ft (1.12 m)



Beam Angle: 15° Spot, High Output

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

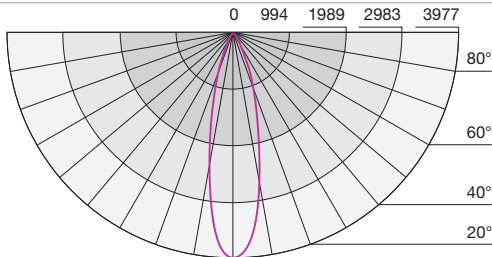
Foot-candles	Distance From Light	Beam Dia.
201.8	6 ft (1.8 m)	1.58 ft (0.48 m)
113.5	8 ft (2.4 m)	2.11 ft (0.64 m)
72.6	10 ft (3 m)	2.63 ft (0.80 m)
50.4	12 ft (3.7 m)	3.16 ft (0.96 m)
37.1	14 ft (4.3 m)	3.69 ft (1.12 m)



Beam Angle: 25° Spot, Low Glare

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

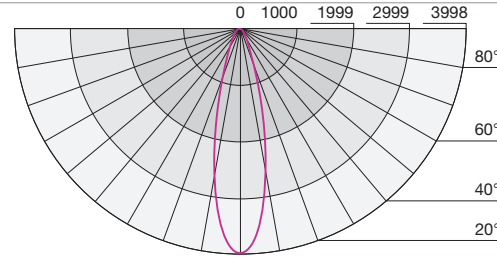
Foot-candles	Distance From Light	Beam Dia.
108.1	6 ft (1.8 m)	2.66 ft (0.81 m)
60.8	8 ft (2.4 m)	3.55 ft (1.08 m)
38.9	10 ft (3 m)	4.43 ft (1.35 m)
27.0	12 ft (3.7 m)	5.32 ft (1.62 m)
19.9	14 ft (4.3 m)	6.21 ft (1.89 m)



Beam Angle: 25° Spot, High Output

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

Foot-candles	Distance From Light	Beam Dia.
108.9	6 ft (1.8 m)	2.66 ft (0.81 m)
61.3	8 ft (2.4 m)	3.55 ft (1.08 m)
39.2	10 ft (3 m)	4.43 ft (1.35 m)
27.2	12 ft (3.7 m)	5.32 ft (1.62 m)
20.0	14 ft (4.3 m)	6.21 ft (1.89 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.

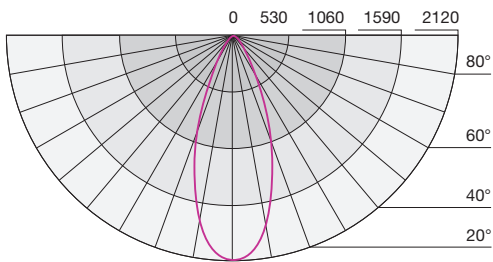
PHOTOMETRIC DATA¹ (cont.)

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) / 4.37 ft (1.33 m)
33.1	8 ft (2.4 m) / 5.82 ft (1.77 m)
21.2	10 ft (3 m) / 7.28 ft (2.21 m)
14.7	12 ft (3.7 m) / 8.74 ft (2.66 m)
10.8	14 ft (4.3 m) / 10.19 ft (3.11 m)

Distance From Light

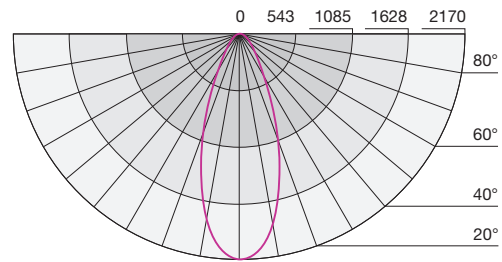


Beam Angle: 40° Wide Flood, High Output

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) / 4.37 ft (1.33 m)
33.9	8 ft (2.4 m) / 5.82 ft (1.77 m)
21.7	10 ft (3 m) / 7.28 ft (2.21 m)
15.1	12 ft (3.7 m) / 8.74 ft (2.66 m)
11.1	14 ft (4.3 m) / 10.19 ft (3.11 m)

Distance From Light

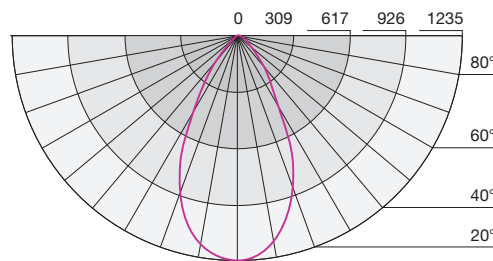


Beam Angle: 60° Very Wide Flood, Low Glare

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) / 6.93 ft (2.11 m)
17.5	8 ft (2.4 m) / 9.24 ft (2.82 m)
11.2	10 ft (3 m) / 11.55 ft (3.52 m)
7.8	12 ft (3.7 m) / 13.86 ft (4.22 m)
5.7	14 ft (4.3 m) / 16.17 ft (4.93 m)

Distance From Light

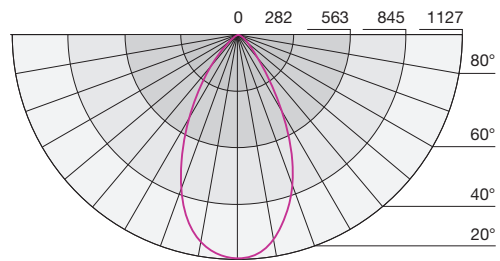


Beam Angle: 60° Very Wide Flood, High Output

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) / 6.93 ft (2.11 m)
18.1	8 ft (2.4 m) / 9.24 ft (2.82 m)
11.5	10 ft (3 m) / 11.55 ft (3.52 m)
8.0	12 ft (3.7 m) / 13.86 ft (4.22 m)
5.9	14 ft (4.3 m) / 16.17 ft (4.93 m)

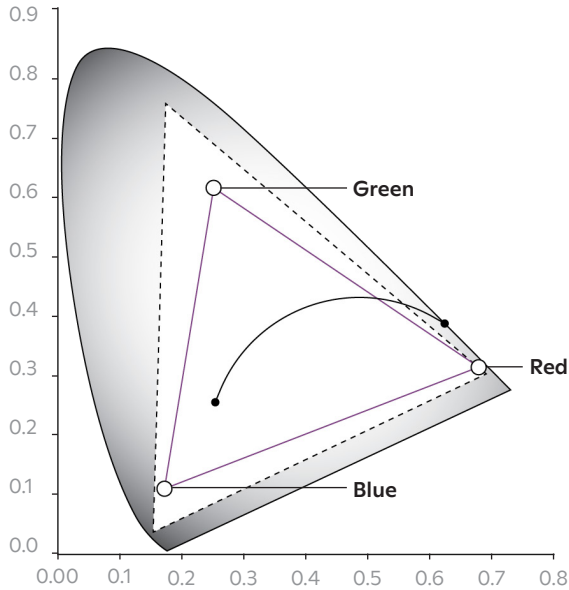
Distance From Light



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 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 2,700K to 5,000K.

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 1,400K to 10,000K 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).

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