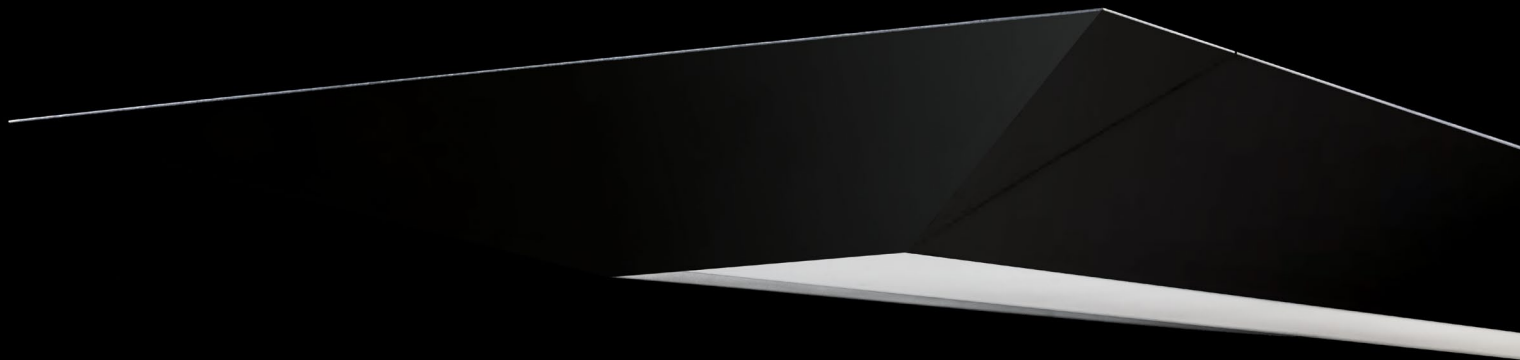


Knife & Rail

LED Indirect/Direct Pendants



VI Contains
Variable Intensity
Technology

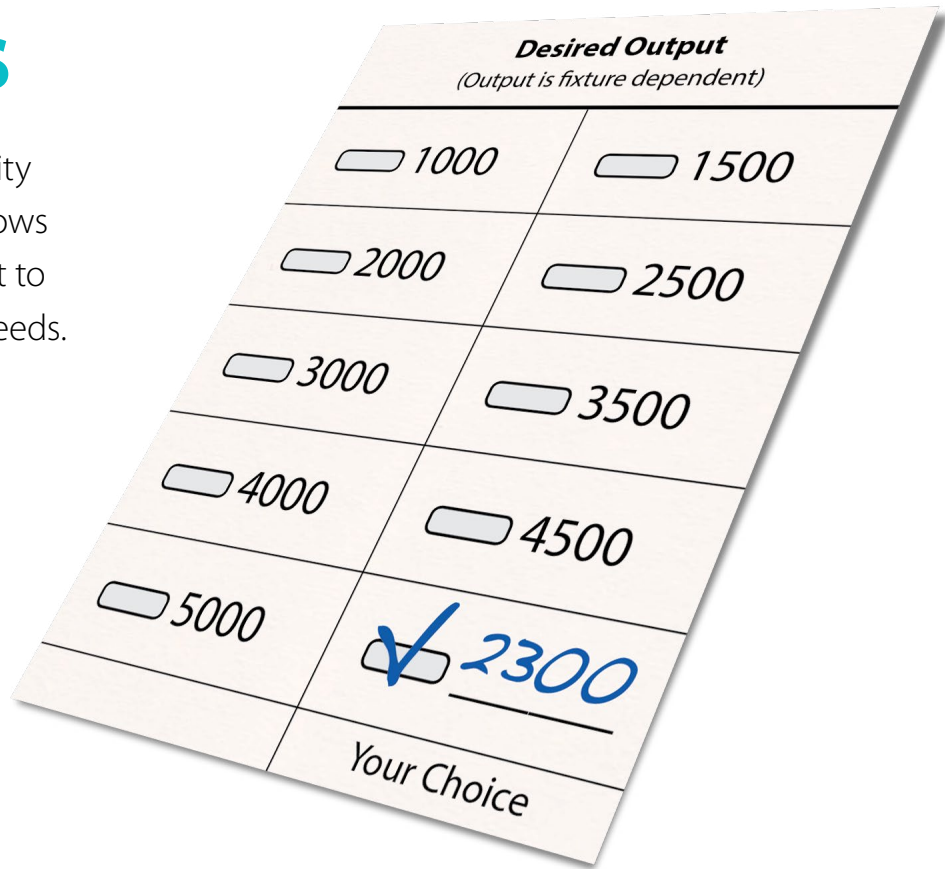
LITECONTROL
making light work™

 **HUBBELL**
Lighting



What It Is

Litecontrol's Variable Intensity (Vi) technology module allows specification of light output to meet precise application needs.



How It Works

Specifier

Step 1



Determine Output

(Work-plane, foot-candles, ceiling brightness, watts per square foot)

Step 2

Ordering Guide

Product, lamping & length									
ID	Series	Length	Height	Mounting	Beam Spread	Beam Angle	Beam Diameter	Beam Spread	Beam Angle
1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
2300	2300	2300	2300	2300	2300	2300	2300	2300	2300
2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
5000	5000	5000	5000	5000	5000	5000	5000	5000	5000

Features & Options:

Fixture Housing Options:
 L11: Extruded aluminum housing. Tapered, knife edge design.
 L12: Extruded aluminum housing. Rectilinear design.

Mounting Options:
 L11: 0.0° - 2.25°
 L12: 4.5° - 2.25°

Beam Spread: 4, 6, 8, 10, 12, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 285, 290, 295, 300, 305, 310, 315, 320, 325, 330, 335, 340, 345, 350, 355, 360, 365, 370, 375, 380, 385, 390, 395, 400, 405, 410, 415, 420, 425, 430, 435, 440, 445, 450, 455, 460, 465, 470, 475, 480, 485, 490, 495, 500, 505, 510, 515, 520, 525, 530, 535, 540, 545, 550, 555, 560, 565, 570, 575, 580, 585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785, 790, 795, 800, 805, 810, 815, 820, 825, 830, 835, 840, 845, 850, 855, 860, 865, 870, 875, 880, 885, 890, 895, 900, 905, 910, 915, 920, 925, 930, 935, 940, 945, 950, 955, 960, 965, 970, 975, 980, 985, 990, 995, 1000

Beam Angle: 4, 6, 8, 10, 12, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 285, 290, 295, 300, 305, 310, 315, 320, 325, 330, 335, 340, 345, 350, 355, 360, 365, 370, 375, 380, 385, 390, 395, 400, 405, 410, 415, 420, 425, 430, 435, 440, 445, 450, 455, 460, 465, 470, 475, 480, 485, 490, 495, 500, 505, 510, 515, 520, 525, 530, 535, 540, 545, 550, 555, 560, 565, 570, 575, 580, 585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785, 790, 795, 800, 805, 810, 815, 820, 825, 830, 835, 840, 845, 850, 855, 860, 865, 870, 875, 880, 885, 890, 895, 900, 905, 910, 915, 920, 925, 930, 935, 940, 945, 950, 955, 960, 965, 970, 975, 980, 985, 990, 995, 1000

Beam Diameter: 4, 6, 8, 10, 12, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 285, 290, 295, 300, 305, 310, 315, 320, 325, 330, 335, 340, 345, 350, 355, 360, 365, 370, 375, 380, 385, 390, 395, 400, 405, 410, 415, 420, 425, 430, 435, 440, 445, 450, 455, 460, 465, 470, 475, 480, 485, 490, 495, 500, 505, 510, 515, 520, 525, 530, 535, 540, 545, 550, 555, 560, 565, 570, 575, 580, 585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785, 790, 795, 800, 805, 810, 815, 820, 825, 830, 835, 840, 845, 850, 855, 860, 865, 870, 875, 880, 885, 890, 895, 900, 905, 910, 915, 920, 925, 930, 935, 940, 945, 950, 955, 960, 965, 970, 975, 980, 985, 990, 995, 1000

Beam Spread: 4, 6, 8, 10, 12, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 285, 290, 295, 300, 305, 310, 315, 320, 325, 330, 335, 340, 345, 350, 355, 360, 365, 370, 375, 380, 385, 390, 395, 400, 405, 410, 415, 420, 425, 430, 435, 440, 445, 450, 455, 460, 465, 470, 475, 480, 485, 490, 495, 500, 505, 510, 515, 520, 525, 530, 535, 540, 545, 550, 555, 560, 565, 570, 575, 580, 585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785, 790, 795, 800, 805, 810, 815, 820, 825, 830, 835, 840, 845, 850, 855, 860, 865, 870, 875, 880, 885, 890, 895, 900, 905, 910, 915, 920, 925, 930, 935, 940, 945, 950, 955, 960, 965, 970, 975, 980, 985, 990, 995, 1000

Beam Angle: 4, 6, 8, 10, 12, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150, 155, 160, 165, 170, 175, 180, 185, 190, 195, 200, 205, 210, 215, 220, 225, 230, 235, 240, 245, 250, 255, 260, 265, 270, 275, 280, 285, 290, 295, 300, 305, 310, 315, 320, 325, 330, 335, 340, 345, 350, 355, 360, 365, 370, 375, 380, 385, 390, 395, 400, 405, 410, 415, 420, 425, 430, 435, 440, 445, 450, 455, 460, 465, 470, 475, 480, 485, 490, 495, 500, 505, 510, 515, 520, 525, 530, 535, 540, 545, 550, 555, 560, 565, 570, 575, 580, 585, 590, 595, 600, 605, 610, 615, 620, 625, 630, 635, 640, 645, 650, 655, 660, 665, 670, 675, 680, 685, 690, 695, 700, 705, 710, 715, 720, 725, 730, 735, 740, 745, 750, 755, 760, 765, 770, 775, 780, 785, 790, 795, 800, 805, 810, 815, 820, 825, 830, 835, 840, 845, 850, 855, 860, 865, 870, 875, 880, 885, 890, 895, 900, 905, 910, 915, 920, 925, 930, 935, 940, 945, 950, 955, 960, 965, 970, 975, 980, 985, 990, 995, 1000

Specify Fixture

Based on published output range

Why Use It?



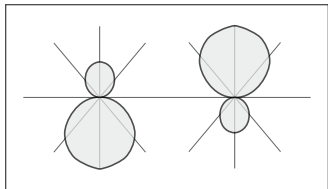
Specify light output required to achieve desired illuminance

Driven by application need, not limited fixture options



Specify fixture wattage to meet power density requirements

Fixture labeled to your specification means no lost watts in your energy calculation



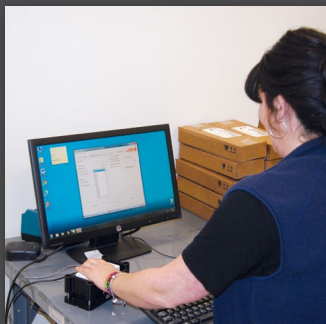
Specify a particular indirect/direct distribution for desired visual comfort*

Uplight and downlight are independently programmed for maximum fixture efficacy

*for I/D fixtures only

Litecontrol

Step 3



Program Fixture

To match specification

Step 4



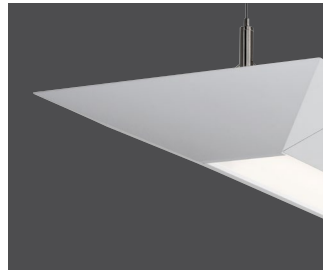
Label Fixture

To precisely match specification

Knife & Rail — Overview

An extremely versatile fixture family,

Knife & Rail provide a wide range of light outputs, luminaire distributions and fixture designs to meet a variety of applications needs.



Knife extrusion features sharp angles for more contemporary spaces.



Rail extrusion has a classic form, with a clean reveal for depth and shadow.

Continuous line of light.

Windowless design allows a continuous diffuser appearance enhancing architectural “lines of light.”

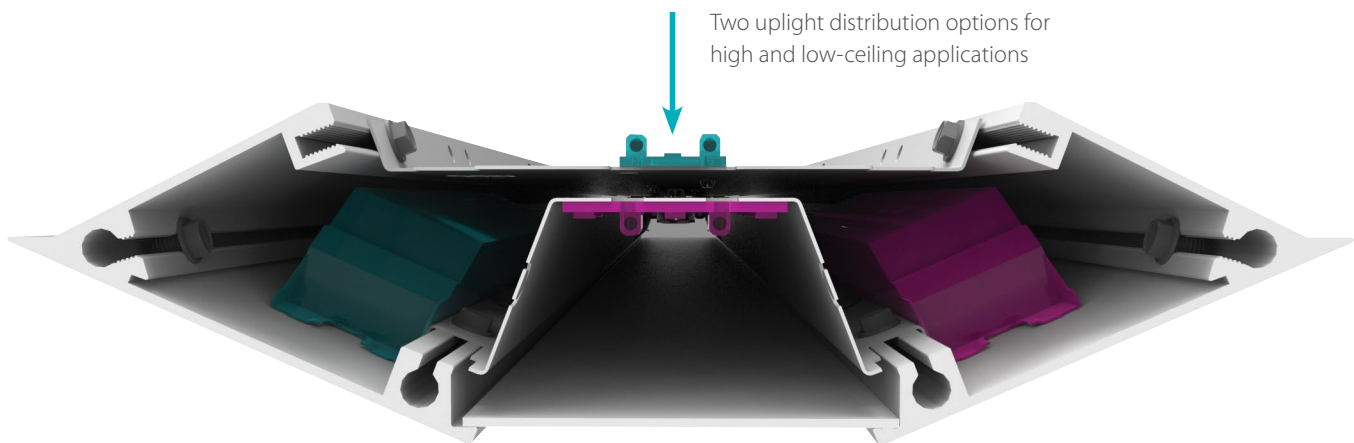
“2-step MacAdam ellipse maximum color variation ensures diffuser consistency.”



Clever construction pushes diffusers together to allow seamless lens appearance. Lens rests on end cap “shelf” eliminating visible gaps.

Vi Technology is utilized for both uplight and downlight hemispheres.

This allows the direct/indirect outputs to be independently specified and controlled, providing tremendous application flexibility.

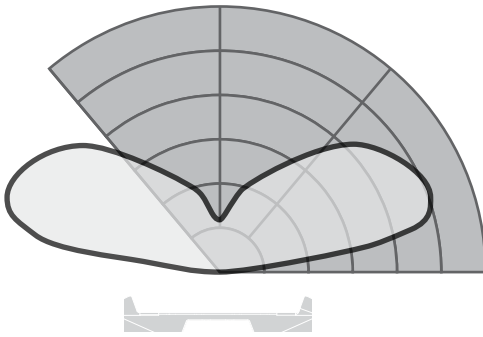


Teal: Uplight boards and drivers
Magenta: Downlight boards and drivers

Distribution Flexibility

Uplight Distribution

LPA (Low Peak Angle) Option



Efficacy Range:

92-104 lm/W

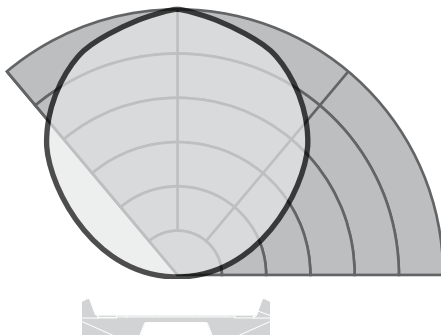
- 112.5 degree peak angle
- Designed for lower ceilings
- Maximum ceiling uniformity

Output Range

Min: 1000 lm/4ft

Max: 4000 lm/4ft

STD (Standard Distribution) Option



Efficacy Range:

111-132 lm/W

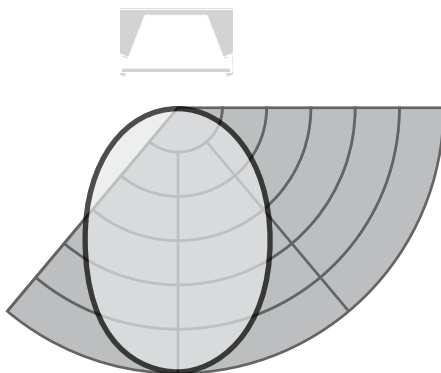
- Lambertian output
- Designed for higher ceilings
- Lowest cost option

Output Range

Min: 1000 lm/4ft

Max: 4000 lm/4ft

Downlight Distribution



Efficacy Range:

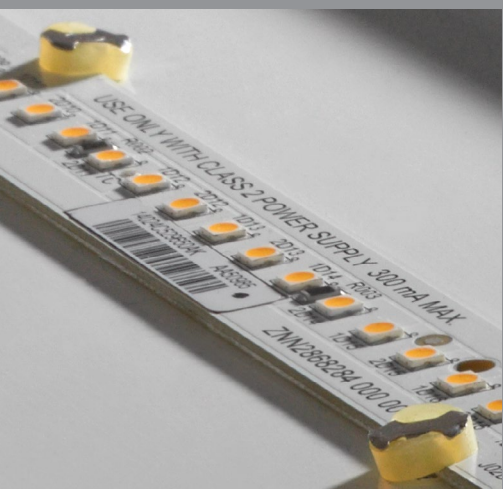
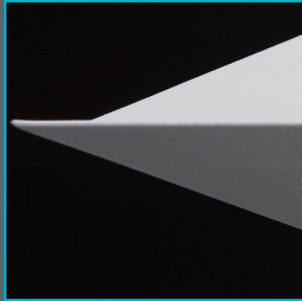
86-104 lm/W

- Lambertian output
- Multiple diffuser options

Output Range

Min: 600 lm/4ft

Max: 3500 lm/4ft



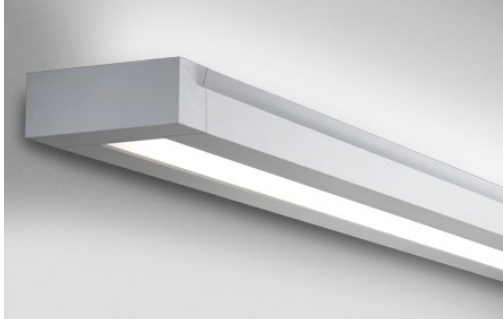


Design. Intent. Value.

Knife & Rail by Litecontrol. Purposeful design
which enhances the architectural environment.

Options & Accessories

Wall Mount



- Both Knife and Rail forms available
- Non ADA compliant

Control/Dimming



- Standard 0-10V and Lutron A-Series drivers available
- Uplight and downlight can be independently dimmed

Diffusers



SOF (SoftLite)

- Highest efficiency option
- 4' and 8' lengths
- Ships factory-installed
- Continuous diffuser appearance



BW/SOF (Baffle w/lens overlay)

- Maximum source shielding
- 4' length
- Ships factory-installed
- Continuous diffuser appearance

Dust Cover (DC)



- Sits recessed in housing; won't displace during cleaning
- Ships factory-installed
- Impacts distribution when used with "LPA" uplight option

Daylight Sensor

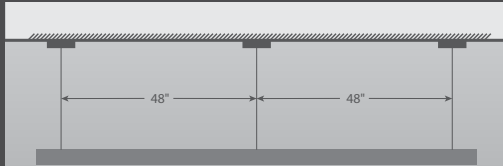


- Wattstopper FD301
- Integrated into lens for clean appearance
- Installs at end of row or fixture join

Contractor Assembly

On-Module Mounting

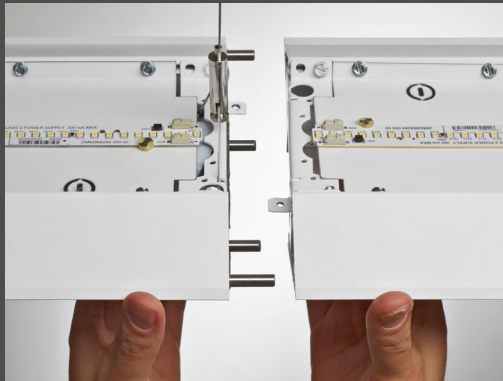
48" spacing between suspension drops ensures installation ease.



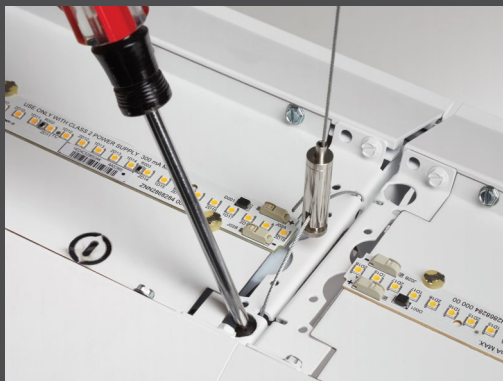
- Suspension drops align with T-bar rail
- Ideal for retrofit installations

Row Joining/ End Cap Assembly

Litecontrol's focus on installation ease is industry-best. Accessible-from-above design provides quick, reliable assembly without component removal.



Dowel pins (provided) align housings & temporarily support fixtures



5/8" phillips pan head screws (provided) ensure tight, consistent seams

Technology Accessibility

LED boards and drivers can be accessed and removed in minutes from above ceiling with fixture installed.



1) Remove reflector screws (or tabs) to release modular board assembly



2) Once reflector modules are removed, drivers are easily accessed and removed via ballast disconnects.



3) Downlight modular board assembly accessed with screw removal.



4) Boards can be replaced either individually or as part of a larger module.

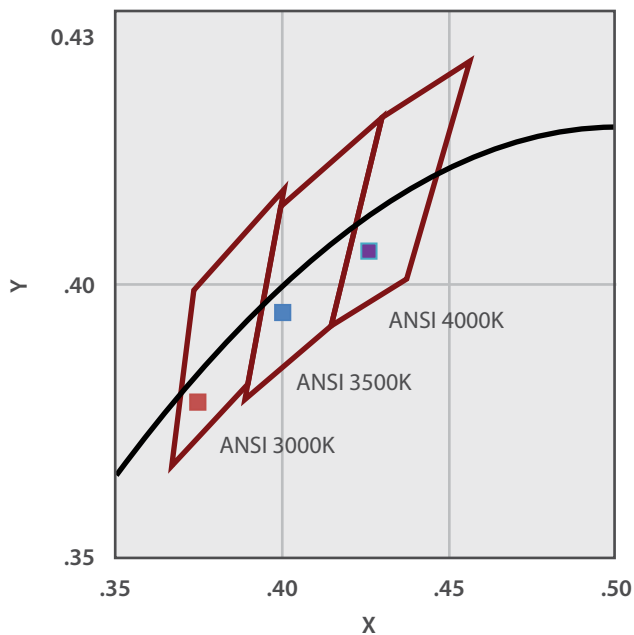
Technology

Color Rendering

CCT	CRI	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
30K	82	81	89	94	80	80	84	85	65	19	73	78	63	83	96
35K	83	82	90	94	81	81	85	87	68	24	75	78	62	84	97
40K	83	82	89	92	81	81	83	88	70	23	72	78	55	84	95

Color Temperature

30K, 35K and 40K color temperatures are available as standard



Rated Life

LED Board

L70 (per TM21/LM80 6x's limitation): >60,300 hrs
 L70 (per TM21 extrapolated curve): 96,000 hrs
 L90 (per TM21 extrapolated curve): 50,000 hrs

LED Driver

Standard: 100,000 hours
 Lutron: 50,000 hours

Dimming

Standard Driver: 0-10V. Uplight and downlight can be controlled separately for maximum flexibility.

Color Consistency

2-Step MacAdam ellipse maximum

Warranty

LED Boards: 5 years
 LED Driver (standard): 5 years
 LED Driver (Lutron): 3 years

Using VI technology, output can be specified in 50 lumen increments per foot.

	Maximum Lumens / 4'	Minimum Lumens / 4'
Indirect Output:	4000	1000
Direct Output:	3500	600

Intensity Options

Ordering Guide

Feature	Options	Description
Series	11L	Knife
Mounting	P	Pendant
Fixture Distribution	ID	Indirect/Direct
Uplight Distribution	STD	Standard
	LPA	Low Peak Angle
Row Length (in feet)	_____'	Enter in foot increments. Note fixture lengths below.
Max Length in row	03	3', 914mm
	04	4', 1219mm
	06	6', 1829mm
	08	8', 2438mm
Downlight Diffuser	SOF	Soft Diffuse
	BWO	Blade Baffle with Overlay
Finish/Color	C1	Matte White (Default)
	C2	Textured, Matte White
	C4	Machined Aluminum
	C5	Carbon Black
	C6	Textured, Carbon Black
	CC	Custom Color
Color Temperature	30K	3000K
	35K	3500K
	40K	4000K
	2230TD	2200K-3000K SpectraSync™ Dim-to-Warm*
	2750T	2700K-5000K SpectraSync™ Tunable White*
	2265T	2700K-6500K SpectraSync™ Tunable White* *Must be ordered with D05 or D55 Driver options; excludes 2' and 3' lengths
Indirect Output/ft <i>(specifiable in 50 lumens/ft increments)</i>	I025	250 (not available in 3' individual)
	I100	1000
Direct Output/ft <i>(specifiable in 50 lumens/ft increments)</i>	D015	150 (not available in 3' individual)
	D090	900
Driver	NDM	Non Dimming
	D05	5% Dimming, 0-10V*
	D55	Soft-Start 5% Dimming*
	D01	1% Dimming, 0-10V
	D51	Soft-Start 1% Dimming
	D00	Dim-to-off
	D50	Soft-Start Dim-to-off (1%)
	LEC	Hi-Lume 1% EcoSystem LED Driver *Must be ordered with 2230TD, 2750T or 2765T Options
Circuiting	1C	1 Circuit
	2C	2 Circuit-Up Light/Down Light
Voltage	UNV	Universal Voltage
	120	120 Volt
	240	240 Volt
	277	277 Volt

Feature	Options	Description
Suspension Kit	FA1	Suspension Kit, 51"
	FA2	Suspension Kit, 87"
	FA3	Suspension Kit, 219"
	FA4	Suspension Kit, 363" *Add suffix /V to replace all 2" non-feed canopy covers with 5" canopy covers. FA1/V = 51" suspension kit w/ 5" canopies; Stems (where applicable), canopies, and feed cord are supplied in white regardless of fixture color unless otherwise specified

Optional Features	Options	Description
-------------------	---------	-------------

Nightlight	_NL	Nightlight Circuit Required. Enter quantity. 2NL=2 nightlight circuits/row
-------------------	-----	---

Emergency	BLP1	Bodine BSL310LP Indicate how many in the row. Example: 2BLP1=2 Emergency batteries/row
------------------	------	--

Thru-wiring	W1	No Thru Wire
	W2	Provide Normal and Emergency Thru Wiring*
	W3	Provide Normal and Thru Wiring Only *Only applicable when specified with Emergency

Dust Cover	L1	Clear Acrylic Dust Cover Lens
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T-Bar Clips	CB1	T-bar clip - 15/16"
	CB2	T-bar clip - 9/16"
	CB3	T-bar clip - 9/16" SS *To be ordered with Luminaire Canopy Box

Control Options	Options	Description
-----------------	---------	-------------

NX*	NXE	NX Enabled, Dual SmartPorts
	NXWE	NX Wireless, Enabled
	NXES	NX Enabled, Dual SmartPorts, PIR Occupancy Sensor, Dimming Daylight Harvesting
	NXS	NX, PIR Occupancy Sensor, Dimming Daylight Harvesting (standalone)
	NXSW	NX Wireless, PIR Occupancy Sensor, Dimming Daylight Harvesting * Not available for row mounting; Only available with D01 Driver option; Contact factory for length restrictions.

Sensors	_SD1	Daylight Sensor Required. Enter quantity. 2SD1= 2 daylight sensors/row
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Performance Example: Various Ceiling Heights

Overview

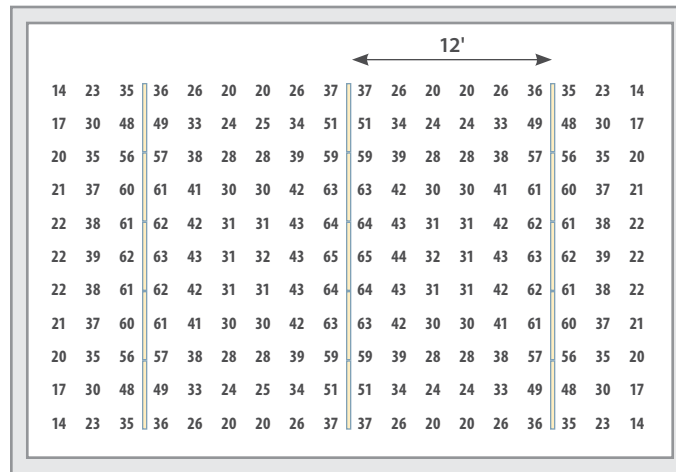
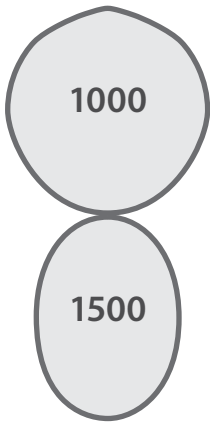
These scenarios demonstrate how Vi technology allows the upright to be programmed to achieve comparable performance in different ceiling heights.

Lighting Goals: Workplane FC: 35 Max LPD: .50

Scenario One

Ceiling height: 9'

Fixture AFF: 7.5'



Fixture Utilized: P-ID-L11-04-SOF-STD-35K-**I1000 D1500**

Workplane (40' x 25')

Avg Max Min Max/Min
38 65 14 4.5:1

Ceiling

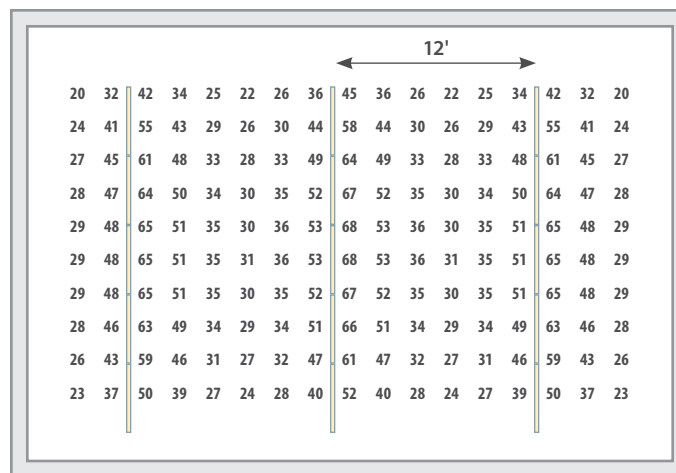
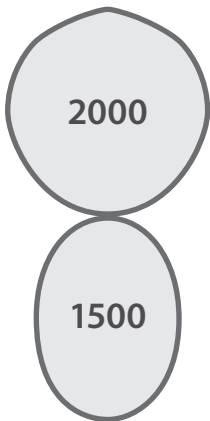
Avg Max Min Max/Min
29 65 7 9.3:1

LPD: .442

Scenario Two

Ceiling height: 18'

Fixture AFF: 7.5'



Fixture Utilized: P-ID-L11-04-SOF-STD-35K-**I2000 D1500**

Workplane (40' x 25')

Avg Max Min Max/Min
41 68 20 3.4:1

Ceiling

Avg Max Min Max/Min
29 34 23 1.5:1

LPD: .562

Conclusion

By adjusting the amount of indirect light, the knife fixture is able to deliver comparable performance in very different applications.

Performance Example: Uplight Distribution Options

Overview

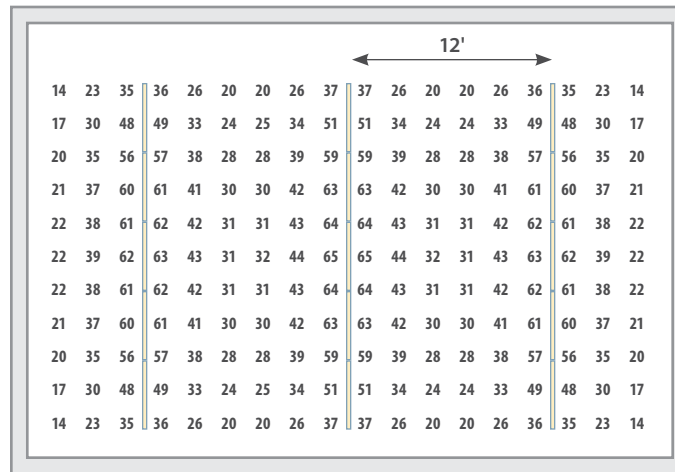
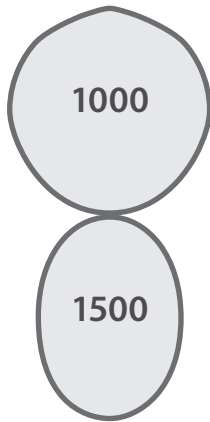
When compared to the Standard (STD) distribution, the Low Peak Angle (LPA) option allows 16' on-center row spacing and therefore elimination of one fixture row.

Lighting Goals: **Workplane FC:** 35 **Max LPD:** .50

Scenario One

Ceiling height: 9'

Fixture AFF: 7.5'



Workplane (40' x 25')

Avg Max Min Max/Min

38 65 14 4.5:1

Ceiling

Avg Max Min Max/Min

29 65 7 9.3:1

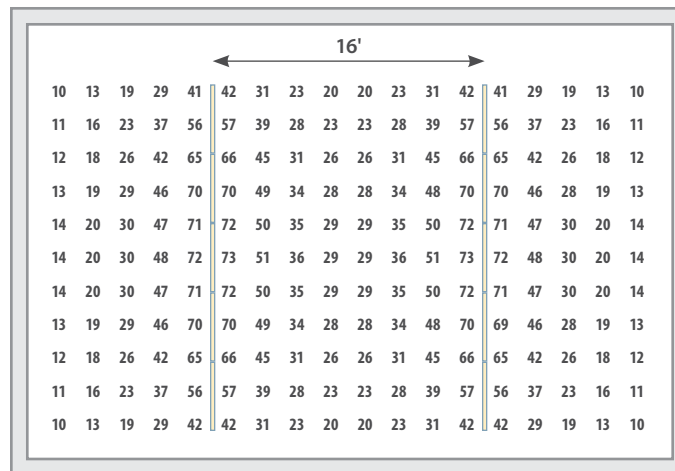
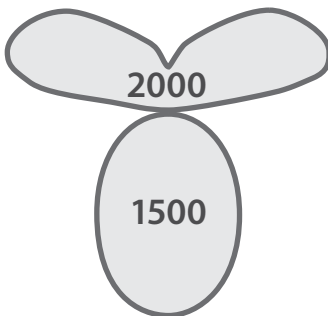
LPD: .442

Fixture Utilized: P-ID-L12-04-SOF-**STD**-35K-I1000 D1500

Scenario Two

Ceiling height: 9'

Fixture AFF: 7.5'



Workplane (40' x 25')

Avg Max Min Max/Min

36 73 10 7.3:1

Ceiling

Avg Max Min Max/Min

38 63 13 4.9:1

LPD: .442

Fixture Utilized: P-ID-L12-04-SOF-**LPA**-35K-I2000 D1500

Conclusion

Both fixture options result in excellent lumen power density, footcandles and uniformity. The LPA option and adjustable output effectively eliminate a fixture row for improved overall installation cost.

Performance Example: Low Ceiling Applications

Overview

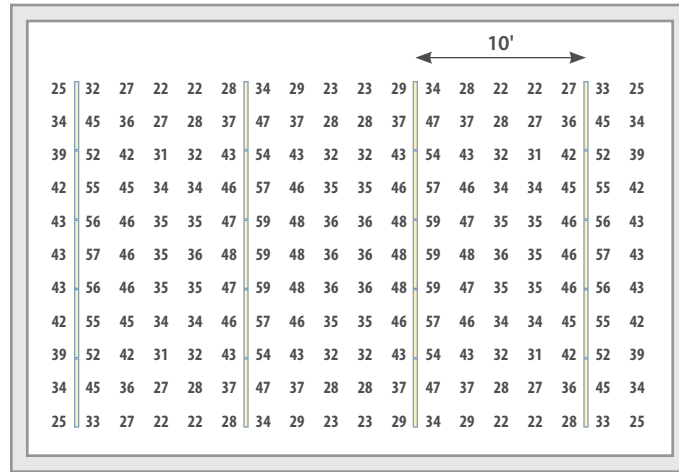
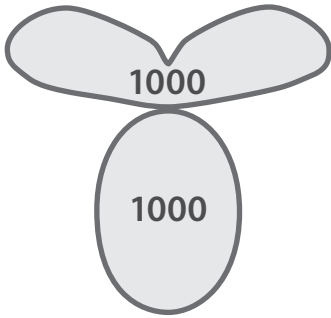
Using the Low Peak Angle (LPA) option in low ceiling applications allows wide row spacing in 6" and 9" fixture suspensions

Lighting Goals: **Workplane FC: 35** **Max LPD: .50**

Scenario One

Ceiling height: 8'

Fixture AFF: 7.5' (6" drop)



Fixture Utilized: P-ID-L11-04-SOF-LPA-35K-I1000 D1000

Workplane (40' x 25')

Avg Max Min Max/Min
39 59 22 2.7:1

Ceiling

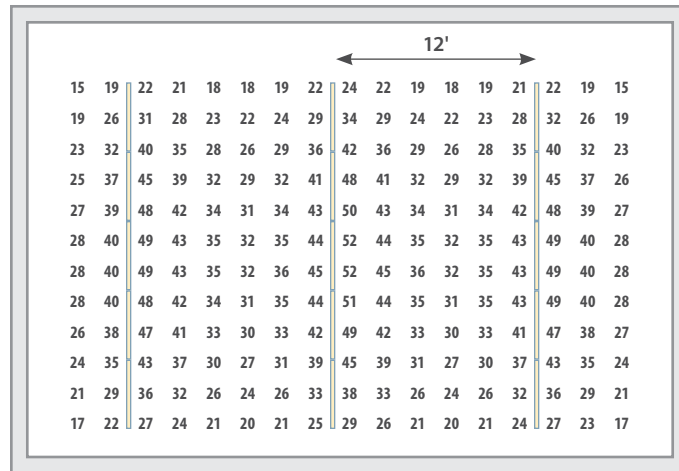
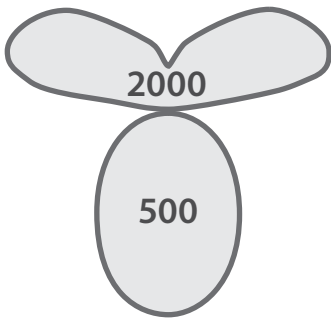
Avg Max Min Max/Min
33 74 9 8.2:1

LPD: .501

Scenario Two

Ceiling height: 8.25'

Fixture AFF: 7.5' (9" drop)



Fixture Utilized: P-ID-L11-04-SOF-LPA-35K-I2000 D500

Workplane (40' x 25')

Avg Max Min Max/Min
33 52 15 3.47:1

Ceiling

Avg Max Min Max/Min
51 114 10 11.4:1

LPD: .442

Conclusion

The LPA upright distribution option provides very effective illumination in low ceilings with wide row spacing.

Performance Example: Furnished Open Office

Overview

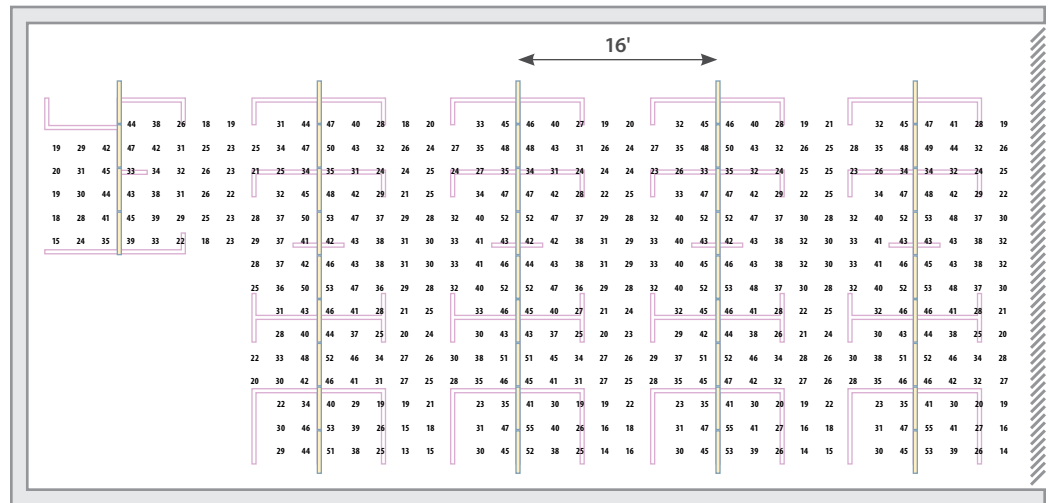
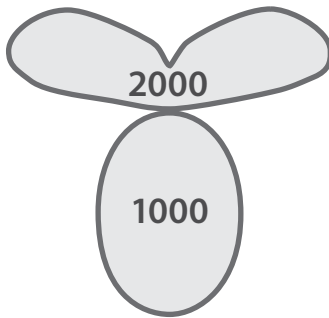
Knife and Rail provide exceptional illuminance levels, uniformity and lumen power density in a fully-rendered office environment.

Lighting Goals: **Workplane FC:** 35 **Max LPD:** .45

Scenario

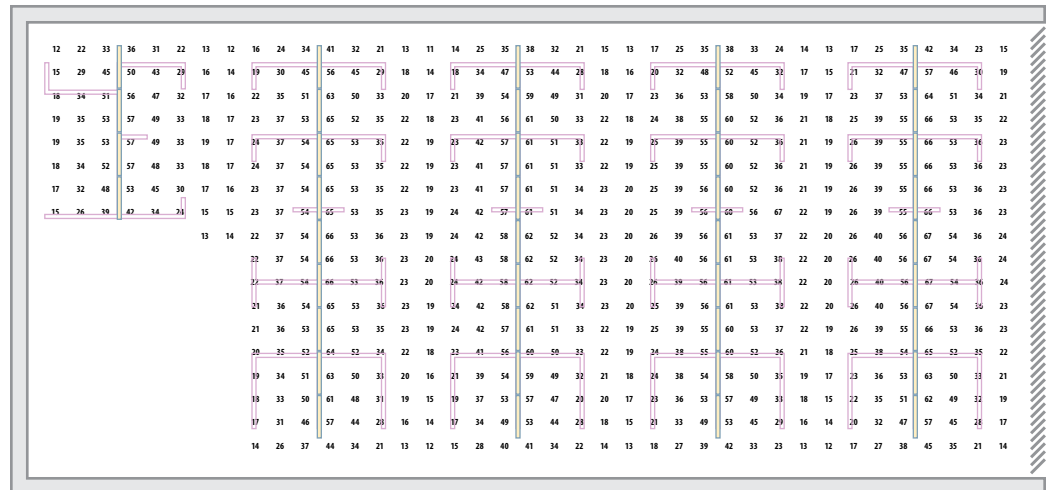
- Room Size: 80' x 40'
- Ceiling height: 9'
- Fixture AFF: 7.5'
- Cubicle Height: 4.5'
- Cubicle Reflectance: 50%
- Row Spacing: 16'

LPD: .427



Fixture Utilized: P-ID-L12-04-SOF-LPA-35K-I2000 D1000

Workplane	Avg	Max	Min	Avg/Min	Max/Min
	35	66	13	2.7	5.1:1



Ceiling	Avg	Max	Min	Avg/Min	Max/Min
	37	67	11	3.4	6.1:1

Conclusion

Knife and Rail are very effective "A" fixture types. Modeled in an actual open office environment, they provide very effective illumination with exceptional row spacing and low lumen power density.



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