



LINEAR FUNDAMENTALS

EssentialLEDs® Linear products provide bright, even linear lighting for a variety of interior applications, including architectural accents, coves, niches, millwork, task and display lighting. EssentialLEDs® fixtures can be specified using **any of the 21 LED board options shown on the following two pages**, broken down into five categories:

- 1. Standard Boards** - five board options that offer a range of lumen output/wattage options **for most applications**.
- 2. Hi CRI Boards** - three board options with a CRI of 95+, for **CA Title 24 JA8-2016 compliance** and superior color rendering of food, artwork and cosmetics.
- 3. Ultra Hi CRI Boards** - introducing the **Nichia Optisolis™** LED with an amazing 98 CRI for when only the best will do. (CA Title 24 JA8-2016 compliant.)
- 4. Pitchless/Narrow Focus Boards** - LED boards with no spacing between the LEDs allow **full diffusion** in our smaller extrusions (Pitchless boards) or the **tightest light distribution** when used with our Focusing Lenses (Narrow Focus).
- 5. Dual Row Boards** - dual rows of Standard or Hi CRI LEDs for **maximum lumen output** in our 9SL fixtures.

The LED boards above can be used in any of **16 linear extrusions**, with standard fixture sizes ranging from **less than 5 inches to almost 12 feet** (finished length options vary based on extrusion and LED board choices).

EssentialLEDs® Linear products are fully dimmable and available in multiple standard and custom finishes; lensed extrusions can include diffusing or focusing lenses. Visit www.vltcorp.com for application photos and the most recent IES files.

LENSING	Lensed and unlensed options available; lens options include clear or three levels of Opal. Focusing lenses available for 7SL, 8SL, 8CL, 8FL, 9SL, 2RL, 3RL, 1QL and 2QL extrusions.
FINISH	All fixtures available in silver, black or bronze anodized finish; some fixtures also available in white powder coating; custom finishes upon request.
LENGTHS	See Length & Wattage Tables for all standard length options; Standard lengths up to 8ft, Extended lengths up to 12ft.
ELECTRICAL	<p>Driver Type: Constant Voltage, Class 2 UL Listed </p> <p>Input Voltage: 24vDC</p> <p>Dimming: ELV, 0-10V, DALI, DMX, Lutron Eco</p> <p>Feed Wire: 96" [2.44m] of 20 AWG Wire [1.02mm²], Male Connector</p> <p>Operating Ambient Temperature: -22° to 104° F [-30° to 40° C]</p> <p>Humidity: 90% RH Non-Condensing</p> <p>Electrostatic Sensitive Device: VLT Recommends using additional surge protection with this unit (supplied by others). Surge damage is not covered by warranty </p>
LIFE & WARRANTY	50,000 HR lifetime for all Nichia LED's except Optisolis™ with 35,000 HR Lifetime (T _a = -25°C to 40°C; T _c max 75°C); 5 year limited warranty
MOUNTING	Mounting options differ according to extrusion; may include fixed and/or adjustable clips, mounting end caps, bushings, free-standing mount, recessed options; up to IP67
LISTINGS & TESTS	<p>cUL_{us} (UL 2108 & 8750); CE Marked; LM79, LM80; Title 24 JA8-2016¹; Dry/Damp; 5SLW Wet Location Rated. (IP Ratings for reference purposes only)</p> <p>1R and 1S NOT UL Listed for closet space; 7SL UL Listed for closet space when using 1720 or 3720 boards; All other extrusions UL Listed for closet space when using 3140 or 3720 boards.</p> <p>The EU's Restriction of Hazardous Substances Directive (RoHS) restricts the use of six hazardous substances* in electrical and electronic equipment (* Lead (Pb), Mercury, Cadmium, Hexavalent chromium, Polybrominated biphenyls and Polybrominated diphenyl ether (PBDE)).</p> <p>¹Please contact factory for current list of JA8-2016 products.</p>

VLT reserves the right to change specifications without notice. Please visit www.vltcorp.com for current cut sheets.

MADE IN USA 

STANDARD LED BOARDS

LED BOARD	1720	2730	4740	5760	6760
LUMEN OUTPUT ¹	260 lm/ft [853 lm/m]	397 lm/ft [1302 lm/m]	528 lm/ft [1732 lm/m]	665 lm/ft [2181 lm/m]	875 lm/ft [2870 lm/m]
POWER CONSUMPTION	1.8 w/ft [6.0 w/m]	2.9 w/ft [9.5 w/m]	3.7w/ft [12.1 w/m]	4.9 w/ft [16.1 w/m]	6.5 w/ft [21.3 w/m]
CRI/TM30	83+; Rf 77, Rg 85	83+; Rf 77, Rg 85	83+; Rf 77, Rg 85	83+; Rf 77, Rg 85	83+; Rf 77, Rg 85
CCT OPTIONS	2000K 2200K 2500K 2700K 3000K 3500K 4000K 4500K 5000K				
APPLIED LED	Nichia 757g	Nichia 757g	Nichia 757g	Nichia 757g	Nichia 757g
BINNING	2 MacAdam Ellipse				
LED EFFICACY ¹	175 lm/w	175 lm/w	175 lm/w	175 lm/w	175 lm/w

¹Based on 3500K CCT

HI CRI LED BOARDS 95+

California Title 24 JA8-2016 Compliant (2700K - 4000K)

LED BOARD	3720	3740	3760
LUMEN OUTPUT ²	223 lm/ft [731 lm/m]	430 lm/ft [1410 lm/m]	609 lm/ft [1998 lm/m]
POWER CONSUMPTION	1.8 w/ft [6.0 w/m]	3.5 w/ft [11.5 w/m]	5.2 w/ft [17.1 w/m]
CRI / TM30	95+; Rf 85, Rg 93	95+; Rf 85, Rg 93	95+; Rf 85, Rg 93
CCT OPTIONS	2000K 2200K 2500K 2700K 3000K 3500K 4000K 4500K 5000K		
APPLIED LED	Nichia 757g	Nichia 757g	Nichia 757g
BINNING	2 MacAdam Ellipse		
LED EFFICACY ²	151 lm/w	151 lm/w	151 lm/w

²Based on 3500K CCT

Our Hi CRI LED boards feature 757g LEDs with a CRI of 95 or higher. CRI - Color Rendering Index - is a measure of how faithfully an artificial light source renders color compared to sunlight, with a highest score of 100. Hi CRI LEDs are especially important when lighting items such as artwork, food and cosmetics, or in closet applications for distinguishing between black and dark blue clothing.

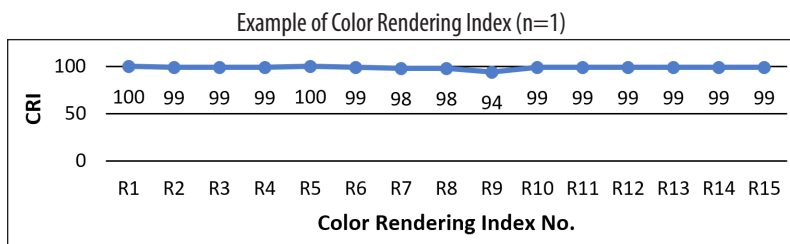
Additionally, compliance with California's Title 24 JA8-2016 standard requires that new and remodel residential lighting applications must have a CRI of 90 or above, with a Kelvin temperature (CCT) between 2700K and 4000K.

New! ULTRA HI CRI LED BOARDS

California Title 24 JA8-2016 Compliant (2700K - 4000K)

Nichia Optisolis™ LEDs achieves Ultra High CRI with a spectrum that demonstrates the closest match to standard incandescent sources. Since UV emission is essentially non-existent, the degradation of lighted materials can be reduced dramatically compared to that of other light sources, including other market available LEDs.

VLT EssentialLEDs™ with Nichia Optisolis™ LEDs target applications include Museum and Art Gallery Lighting, Retail Lighting or anywhere the highest CRI is preferred, but UV radiation can be detrimental.



LED BOARD	3790
LUMEN OUTPUT ³	621 lm/ft [2037 lm/m]
POWER CONSUMPTION	6.9 w/ft [22.6 w/m]
CRI / TM30	98; Rf 90, Rg 98
CCT OPTIONS	2700K 3000K 3500K 4000K 5000K
APPLIED LED	Nichia 757g
BINNING	3 MacAdam Ellipse
LED EFFICACY ³	138 lm/w

³Based on 3500K CCT

New! PITCHLESS LED BOARDS - NICHIA 757g

LED BOARD	STANDARD			HI CRI 95+			ULTRA HI CRI			TUNABLE WHITE	
	5140	5160	5180	3140	3160	3180	3150	3170	3190	7180	
LUMEN OUTPUT ¹	287 lm/ft [941 lm/m]	571 lm/ft [1872 lm/m]	920 lm/ft [3017 lm/m]	237 lm/ft [777 lm/m]	469 lm/ft [1538 lm/m]	773 lm/ft [2535 lm/m]	202 lm/ft [662 lm/m]	404 lm/ft [1325 lm/m]	710 lm/ft [2329 lm/m]	750 lm/ft ² [2460 lm/m]	
POWER CONSUMPTION	2.2 w/ft [7.2 w/m]	4.3 w/ft [14.1 w/m]	6.9 w/ft [22.6 w/m]	2.2 w/ft [7.2 w/m]	4.3 w/ft [14.1 w/m]	6.9 w/ft [22.6 w/m]	2.2 w/ft [7.2 w/m]	3.9 w/ft [12.8 w/m]	6.9 w/ft [22.6 w/m]	6.9 w/ft [22.6 w/m]	
CRI / TM30	83+; Rf 77, Rg 85			95+; Rf 85, Rg 93			98; Rf 90, Rg 98			83+ / 95+; Rf77, Rg 85 / Rf 85, Rg 93	
CCT OPTIONS	2000K, 2200K, 2500K, 2700K, 3000K, 3500K, 4000K, 4500K, 5000K			2000K, 2200K, 2500K, 2700K, 3000K, 3500K, 4000K, 4500K, 5000K			2700K, 3000K, 3500K, 4000K, 5000K			2000K/3000K 2500K/4000K	3000K/4000K 3500K/4500K
APPLIED LED	757g	757g	757g	757g	757g	757g	757g	757g	757g	757g	757g
BINNING	3 MacAdam Ellipse			3 MacAdam Ellipse			3 MacAdam Ellipse			3 MacAdam Ellipse	
LED EFFICACY ¹	175 lm/w	175 lm/w	175 lm/w	151 lm/w	151 lm/w	151 lm/w	138 lm/w	138 lm/w	138 lm/w	175/151 lm/w	151/151 lm/w

¹ Based on 3500K CCT ² Total Lumen Output with All LEDs at Full Power

"Pitch" is the term used to describe the spacing between LEDs on a circuit board. A "pitchless" board has no spacing between the LEDs, a feature that results in an extra bright board that eliminates the "dot" pattern of LED diodes and allows the diodes to fully diffuse even in small extrusions. Our new pitchless boards use the Nichia 757g LEDs, and will provide full diffusion when paired with Opal lenses. The new pitchless boards are available in three versions - Standard, Hi CRI, Ultra Hi CRI, and a Tunable White LED Board available in four CCT ranges. The new pitchless LED boards can be used with 8SL, 8CL, 8FL, or 9SL linear fixtures.

Pitchless Standard: Lumen output as high as 920 lm/ft, 83+ CRI

Pitchless Hi CRI: Lumen output as high as 773 lm/ft, 95+ CRI

Pitchless Ultra Hi CRI: Lumen output as high as 600 lm/ft, 98 CRI

Pitchless Tunable White: Max lumen output of 750 lm/ft. when all LEDs are at full power; single CCT output approximately 375 lumens. CRI will vary based on CCT choices.

PITCHLESS LED BOARDS FOR NARROW FOCUS

LED BOARD	PITCHLESS/NARROW FOCUS	
	5133	5163
LUMEN OUTPUT ³	315 lm/ft 1033 lm/m]	548 lm/ft [1797 lm/m]
POWER CONSUMPTION	3.4 w/ft [11.2 w/m]	6.6 w/ft [21.7 w/m]
CRI / TM30	87; Rf 82, Rg 90	
CCT OPTIONS	2700K, 3000K, 3500K, 4000K, 4500K, 5000K	
APPLIED LED	Nichia 157b	Nichia 157b
BINNING	2 MacAdam Ellipse	
LED EFFICACY ³	108 lm/w	108 lm/w

The 5133 & 5163 boards at left use a narrower Nichia 157b LED, which produces a tighter distribution when used with a focusing lens. The 5133 & 5163 LED boards can produce light distribution as narrow as 18° when used with our Lens 2. See the chart on page 16 for more information on the light distribution options when using the 5133 & 5163 LED boards.

³ Based on 3500K CCT

DUAL-ROW FOR MAXIMUM LUMEN OUTPUT

Our 9SL profile can accommodate two LED boards to provide the **maximum lumen output possible** in an EssentialLEDs® linear fixture. The chart at right provides data for two rows of the LED boards most likely to be specified in dual-row configurations. You may specify dual-rows of most of our LED boards in 9SL extrusions; for data on LED boards not included in this chart, please contact the factory.



9SL

LED BOARD	3760 D (Hi CRI) ²	6760 D (Hi OUTPUT)	3790 D (Ultra Hi CRI) ²
LUMEN OUTPUT ¹	1218 lm/ft [3995 lm/m]	1750 lm/ft [5740 lm/m]	1242 lm/ft [4074 lm/m]
POWER CONSUMPTION	10.4 w/ft [34.1 w/m]	13.0 w/ft [42.7 w/m]	13.8 w/ft [45.3 w/m]
CRI / TM30	95+; Rf 85, Rg 93	83+; Rf 77, Rg 85	98; Rf 90, Rg 98
CCT OPTIONS	2000K 2200K 2500K 2700K 3000K 3500K 4000K 4500K 5000K		2700K 3000K 3500K 4000K 5000K
APPLIED LED	Nichia 757g	Nichia 757g	Nichia 757g
BINNING	2 MacAdam Ellipse		3 MacAdam Ellipse
LED EFFICACY ¹	151 lm/w	175 lm/w	138 lm/w

¹ Based on 3500K CCT ² California Title 24 JA8-2016 compliant in 2700K-4000K CCT's

LIGHT OUTPUT CONVERSION

CCT	2000°K	2200°K	2500°K	2700°K	3000°K	3500°K	4000°K	4500°K	5000°K
LIGHT OUTPUT CONVERSION	0.68	0.74	0.82	0.96	1.0	1.0	1.0	1.01	1.1

3500°K LEDs are used for all photometric testing. To determine lumen outputs for other color temperatures, use the designated multiplier in the table above.

IES files for LED and extrusion options can be found on our website at www.essentialLEDs.com. You'll find them on the "downloads" tab for each extrusion type.

PHOTOMETRICS

VLT is proud of the extraordinary selection of fixture profiles and LED Boards we offer. This abundance of options makes presenting of Photometric data much better suited to our website. Please see vltcorp.com for all photometrics.

