

All in 1

LED Lighting Solutions Guide

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Future Lighting Solutions Value Propositions

SOLID-STATE LIGHTING EXPERTISE

Enabling customers worldwide with our lighting knowledge, experienced team and network of partners.



DESIGN SUPPORT SERVICES

Accelerating customer adoption with our suite of unparalleled design tools, 3 lighting resource centers, application solutions and extensive product portfolio.



SUPPLY CHAIN & BUSINESS SOLUTIONS

Facilitating customer growth with world class service, global supply chain solutions, flexible payment terms, and value-added loyalty programs.



Resources: Solid-State Lighting Expertise



LITERATURE AND BROCHURES

- Applications Solutions Brochures
www.FutureLightingSolutions.com/literature
- Future Technology Magazine (FTM)
www.FutureElectronics.com/FTM
- Technology Specific Collateral
www.FutureLightingSolutions.com/literature



WEB

- Dedicated award winning website in multiple languages
www.FutureLightingSolutions.com
- Virtual catalogs
www.FutureLightingSolutions.com/literature
- Lighting Technology E-newsletters (L-Techs)
Register at www.FutureLightingSolutions.com
- Webinars
www.FutureLightingSolutions.com/videos



SOCIAL MEDIA ACTIVITY

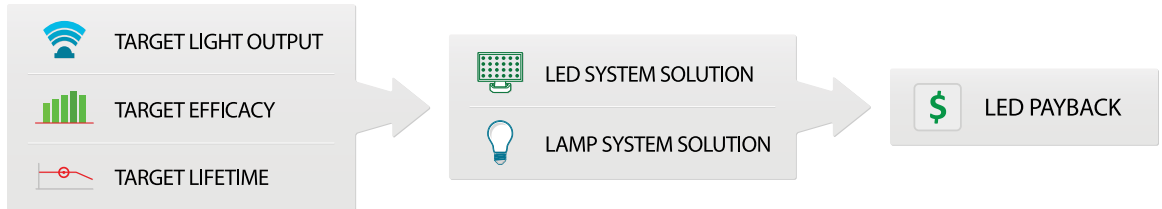
- YouTube™ video community
www.YouTube.com/videosFLS
- Facebook
www.facebook.com/FutureLightingSolutions
- Twitter
www.twitter.com/FLStweets



PUBLIC RELATIONS CAMPAIGNS

- Tradeshows and Seminars
www.FutureLightingSolutions.com/events
- Press Releases and Case Studies
www.FutureLightingSolutions.com/pressreleases

Resources: Design Support Services



MAIN FEATURES AND BENEFITS

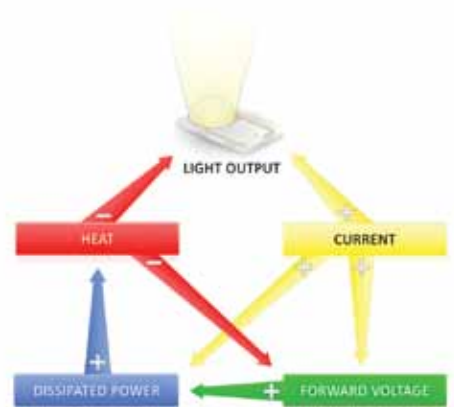
- Sets and optimizes design parameters based on target specifications
- Facilitates and accelerates engineering design decisions
- Determines the minimum number of LEDs and optimal drive currents to meet system performance requirements
- Calculates system costs and payback schedules
- Compares solid-state lighting systems to traditional lamp systems
- Manages the tradeoffs between performance and costs
- Available in multiple languages (English, Japanese, Korean, Simplified and Traditional Chinese, Thai and Vietnamese)

To use the SSL Designer, visit www.FutureLightingSolutions.com/ssldesigner



MAIN FEATURES AND BENEFITS

- Evaluates and compares LED light levels in “real world” operating conditions
- Considers the effects of 7 critical relationships between current, forward voltage, dissipated power, and heat on light output
- Incorporates the effects of LED count, ambient temperature, board type and heat sink dimensions
- Includes a complete list of LUXEON LEDs with datasheets
- Generates a total of 40 performance charts
- Includes a value calculator that analyzes LED system and power costs and savings
- Available in multiple languages




To register for the ULT, visit www.FutureLightingSolutions.com/ULT

Driver Selector Tool



MAIN FEATURES AND BENEFITS

- Simplifies driver module selection based on “real world” LED performance
 - Includes a complete list of driver options and datasheets
 - Allows the flexibility to choose between constant current and constant voltage drivers
 - Includes the option to select the number of channels and/or parallel strings
 - Provides selection options for driver output voltage, dimming, thermal feedback, etc.
 - Includes the ability to specify the number of potential LED wear-out failures
 - Includes the impact of temperature on LED forward voltage
-  To use the Driver Selector Tool, visit www.FutureLightingSolutions.com/DST

Resources: Design Support Services

Lighting Resource Centers

Future Lighting Solutions' Lighting Resource Centers (LRCs) provide an unprecedented level of technical service and support, enabling customers to develop solid-state lighting solutions.

The LRCs offer 6 main services:



APPLICATION DEVELOPMENT

Future Lighting Solutions' Applications Team develops designs and demos that cover the most common applications in the lighting market. Designs include selecting the right light source, power, optical, and thermal solutions that meet the industry standards.



LED BOARD DESIGN

Experienced design engineers assist customers in the development of LED circuit boards.



THERMAL DESIGN AND SIMULATION

Using our thermal simulation software, our engineers can design, simulate and optimize a thermal management solution customized per application.



MECHANICAL DESIGN AND SIMULATION

The LRCs provide mechanical design and simulation services that include designing and implementing modifications to new and existing fixtures.



OPTICAL DESIGN AND SIMULATION

The LRCs provide optical design and detailed analyses of optical systems to customers.



LED AND SYSTEM MEASUREMENTS

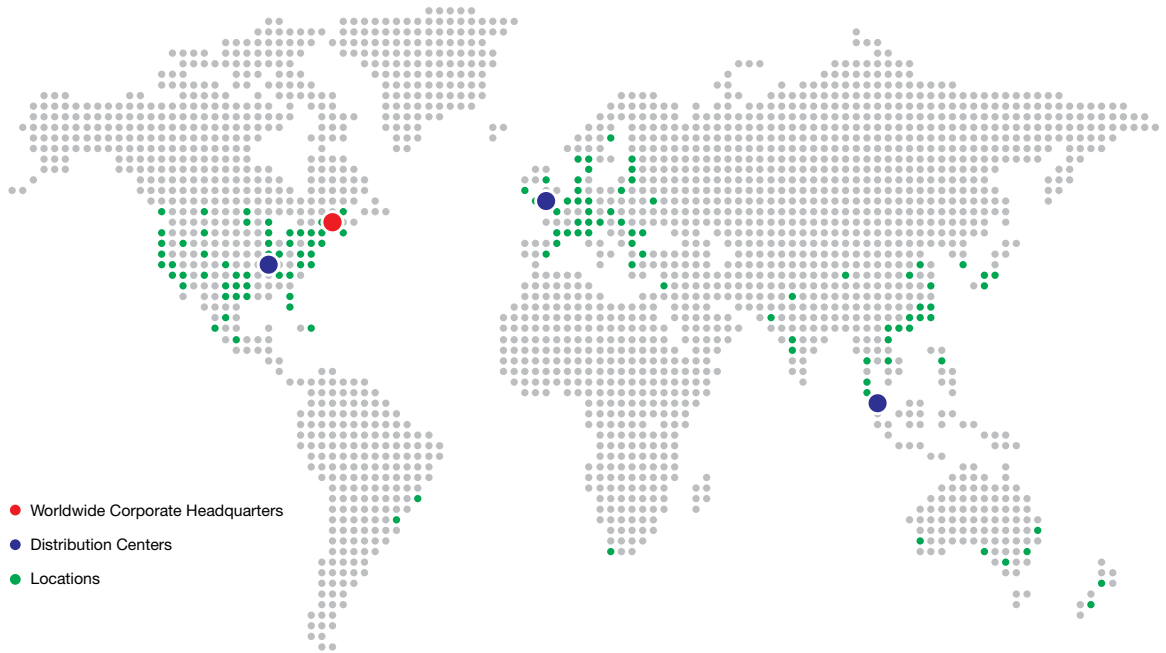
The LRCs leverage state-of-the-art equipment to provide accurate LED and system measurements such as LED flux, illuminance, chromaticity coordinates, CRI, radiation pattern and more.



To determine if you qualify to take advantage of the LRCs' services, send an email to LRC@FutureLightingSolutions.com

Resources: Supply Chain

Supply Chain Solutions



BENEFITS

- Access to the largest available-to-sell inventory in the world
- Lowest turns ratio in the industry
- Industry leading warehouse and customized binning software
- Real-time visibility and global access to inventory worldwide
- Quick quote turnaround
- Reduced transit times
- Industry's highest level of on-time delivery (> 99.5%)

These strengths, along with our specialized solid-state lighting expertise, enable us to offer you the best technology and most sustainable supply in the industry.



For more information visit www.FutureLightingSolutions.com/contacts

LEDs & SYSTEM COMPONENTS



LEDs

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OPTICS

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POWER SOLUTIONS

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CONTROLS

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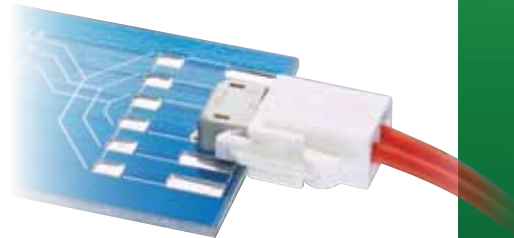
THERMAL

PAGES 54-57



CONNECTORS

PAGES 58-61



LUXEON® High Power LEDs

Philips Lumileds LUXEON LEDs support global agendas to reduce CO2 emissions, minimize new energy plant expansion, and build more environmentally friendly products. With no mercury or lead content, no heat in the light beam and the ability for digital control, LUXEON LEDs are ideally suited for a broad range of lighting needs.



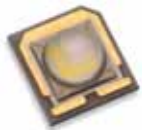
LUXEON A

LUXEON A delivers “Freedom From Binning,” superior efficacy and light output. With a color distribution entirely within a 3-step MacAdam Ellipse on the blackbody curve and hot testing and binning to ensure that your in-application performance is known in advance, LUXEON A represents a tremendous step forward in simplifying lighting solution development for retail, hospitality, office, schools, home, and outdoor lighting applications.



LUXEON R

LUXEON R delivers superior quality of light, volume of lumens, and real world efficacy to enable leading performance and efficient solution development in a wide variety of lighting segments including streetlight, high bay, parking lot, low bay, industrial, under canopy, outdoor architectural, city beautification, and advertising/signage illumination.



LUXEON S

LUXEON S redefines what’s possible for LED based retail spot and down lighting. LUXEON S delivers “Freedom From Binning” to ensure the highest quality of light and provide simple, effective, and efficient lighting. Because LUXEON S is hot tested and binned, the performance is already known at application conditions, further simplifying and speeding the development process and solution confidence.



LUXEON M

LUXEON M delivers breakthrough flux density and efficiency for outdoor and wide area lighting applications. With industry leading quality of light, Freedom From Binning, and Hot Testing and Specification, fixture manufacturers will be able to realize reduced system costs and leading efficacy.



LUXEON H

LUXEON H delivers superior quality of light and Freedom From Binning, making it an ideal solution for space-constrained and cost sensitive retrofit bulbs and luminaires. Its high voltage architecture minimizes driver requirements and lowers overall system costs.



LUXEON K

LUXEON K arrays deliver thousands of lumens of light output and are available in three different CCTs and five configurations. As a Level 2 solution for ease of system integration with guaranteed performance at real world operating conditions, the LUXEON K is hot tested with Freedom From Binning to further simplify design-in and manufacturing.



For more information, visit www.FutureLightingSolutions.com



LUXEON®

BY PHILIPS LUMILEDS



LUXEON C

LUXEON C is the most compact power LED that enables manufacturers of appliances, portable lighting solutions and power tools to economically incorporate high quality, high performance LEDs in their applications. LUXEON C delivers high lumens per dollar in a very compact package.



LUXEON REBEL ES

LUXEON Rebel ES gives you the flexibility you need for designing luminaires and lamps. Tested and binned at 700 mA, you can confidently design LUXEON Rebel ES into high lumen applications or create more energy efficient devices using the same emitter. You can count on LUXEON Rebel ES for quality, reliability and in-device performance.



LUXEON REBEL PLUS

LUXEON Rebel PLUS LEDs are designed to offer single emitter, Illumination Grade LED light sources with the highest possible efficacy and light output. With hot testing and color binning, every LUXEON Rebel PLUS is tested and specified at real world operating conditions, $T_j = 85^{\circ}\text{C}$. The superior quality of light, light output, and real world efficacy enable leading performance and efficient solution development in a wide variety of indoor lighting segments including retrofit bulbs, office, hospitality, school, and home lighting.



LUXEON REBEL ILLUMINATION PORTFOLIO

The LUXEON Rebel Illumination Portfolio emitters deliver optimized combinations of light quality and light output needed for today's lighting applications. In addition to delivering specified Correlated Color Temperature and Color Rendering combinations, these emitters are ANSI binned, delivering the efficacy, lifetime and reliability for which all LUXEON Rebel LEDs are renowned.



LUXEON REBEL DIRECT COLOR

With LUXEON Rebel Color LEDs you can create visually stunning and entertaining lighting applications. LUXEON Rebel LEDs offer the light output, reliability and lumen maintenance that enable today's most distinctive lighting applications.



LUXEON Z

LUXEON Z is a portfolio of extraordinarily small, un-domed, power LEDs in colors from 670 nm to 440 nm and 4000K white. With unparalleled flexibility in light source engineering and optical management, LUXEON Z is the closest you can get to designing at the LED chip level. With LUXEON Z, you can create customized "multi-chip", multi-color light sources.

LUXEON® High Power LEDs

LUXEON A (“Freedom From Binning”, tested at $T_j = 85^\circ\text{C}$)

Color	Part Number	CCT	Minimum CRI	Typical CRI	Min Flux (lumens)	Typ Flux (lumens)	Test Forward Current (mA)	Maximum Ratings	Efficacy (lm/W)	
									@ 350mA	@ 700mA
Cool-White	LXH8-PW50	5000K	80	85	170	190	700	DC Forward Current: 1000mA	111	93
Neutral-White	LXH8-PW40	4000K	80	85	160	183			107	90
Warm-White	LXH8-PW30	3000K	80	85	150	174		LED Junction Temperature: 150°C	102	79
	LXH9-PW30	3000K	90	95	120	135			79	67
	LXH8-PW27	2700K	80	85	140	160			93	76

Please refer to “Freedom From Binning” 3-step MacAdam Ellipse charts on page 16.

LUXEON R (“Freedom From Binning”, tested at $T_j = 85^\circ\text{C}$)

Color	Part Number	Nominal CCT	Minimum CRI	Typical CRI	Min Flux (lumens)	Typ Flux (lumens)	Test Forward Current (mA)	Maximum Ratings	Typical Efficacy (lm/W)
Cool-White	LXA7-PW65	ANSI 6500K	70	75	200	220	700mA	DC Forward Current: 1000mA	112
	LXA7-PW57	ANSI 5700K	70	75	200	220			112
	LXA7-PW50	ANSI 5000K	70	75	200	220		112	
Neutral-White	LXA7-PW40	ANSI 4000K	70	75	200	220	LED Junction Temperature: 150°C	109	
Warm-White	LXA7-PW30	ANSI 3000K	70	75	160	180		92	

Please refer to “Freedom From Binning” 5-step MacAdam Ellipse charts on page 16.

LUXEON S (“Freedom From Binning”, tested at $T_j = 85^\circ\text{C}$)

Color	Part Number	Nominal CCT	Minimum CRI	Typical CRI	Min Flux (lumens)	Typ Flux (lumens)	Test Forward Current (mA)	Maximum Ratings	Typical Efficacy (lm/W)
Neutral-White	LXS8-PW40	ANSI 4000K	80	85	1360	1450	700	DC Forward Current: 700mA	80
	LXS8-PW27	ANSI 2700K	80	85	1200	1330	700		73
Warm-White	LXS8-PW35	ANSI 3500K	80	85	1300	1420	700	LED Junction Temperature: 115°C	78
	LXS9-PW30	ANSI 3000K	90	93	1050	1175	700		65
	LXS8-PW30	ANSI 3000K	80	85	1175	1300	700		69

Note: Mounted directly on a heat sink using TE Connectivity Solderless LED Socket, Type LS.

Please refer to “Freedom From Binning” 3-step MacAdam Ellipse charts on page 16.

TE CONNECTIVITY SOLDERLESS LED SOCKET, TYPE LS

Part number	Description
2154235-1	Solderless LED socket, type LS without optic latches
2154235-2	Solderless LED socket, type LS with optic latches

 For technical documents, visit www.FutureLightingSolutions.com



LUXEON M (“Freedom From Binning”, tested at $T_j = 85^\circ\text{C}$)

Color	Part Number	Nominal CCT	Minimum CRI	Typical CRI	Min Flux (lumens)	Typ Flux (lumens)	Test Forward Current (mA)	Maximum Ratings	Typical Efficacy (lm/W)
Cool-White	LXR7-SW57	ANSI 5700K	70	75	840	905	700mA	DC Forward Current: 1050mA	115
Neutral-White	LXR7-SW40	ANSI 4000K	70	75	840	905	700mA	LED Junction Temperature: 135°C	115

Please refer to “Freedom From Binning” 5-step MacAdam Ellipse charts on page 16.

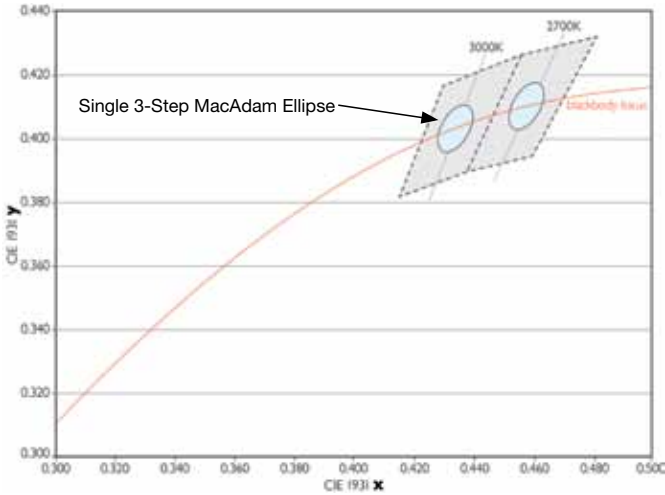
LUXEON H (“Freedom From Binning”, tested at $T_j = 85^\circ\text{C}$)

Color	Series	Part Number	Voltage	Nominal CCT	Minimum CRI	Typical CRI	Min Flux (lumens)	Typ Flux (lumens)	Test Forward Current (mA)	Binning Description	Maximum Ratings	Typical Efficacy (lm/W)
Neutral-White	H100-8	LXV8-PW40-0014	100	4000K	80	85	340	408	40	3 SDCM color; One flux, One Vf bin	DC Forward Current: 100mA; LED Junction Temperature: 150°C	106
	H200-8	LXV8-PW40-0024	200	4000K	80	85	340	408	20	3 SDCM color; One flux, One Vf bin	DC Forward Current: 50mA; LED Junction Temperature: 150°C	106
Warm-White	H50-1	LXAC-PW30	50	ANSI 3000K	80	83	50	67	20	ANSI Color Binning	DC Forward Current: 30mA; LED Junction Temperature: 125°C	63
	H50-2	LXAC-1830	50	3000K	80		160	175	40	3 and 5 SDCM Color Binning	DC Forward Current: 45mA; LED Junction Temperature: 125°C	88
	H100-8	LXV8-PW30-0014	100	3000K	80	83	320	340	40	3 SDCM color; One flux, One Vf bin	DC Forward Current: 100mA; LED Junction Temperature: 150°C	89
	H200-8	LXV8-PW30-0024	200	3000K	80	83	320	340	20	3 SDCM color; One flux, One Vf bin	DC Forward Current: 50mA; LED Junction Temperature: 150°C	89
	H50-1	LXAC-PW27	50	ANSI 2700K	80	83	50	63	20	ANSI Color Binning	DC Forward Current: 30mA; LED Junction Temperature: 125°C	59
	H50-2	LXAC-1827	50	2700K	80		150	165	40	3 and 5 SDCM Color Binning	DC Forward Current: 45mA; LED Junction Temperature: 125°C	83
	H100-8	LXV8-PW27-0014	100	2700K	80	82	300	320	40	3 SDCM color; One flux, One Vf bin	DC Forward Current: 100mA; LED Junction Temperature: 150°C	83
	H200-8	LXV8-PW27-0024	200	2700K	80	82	300	320	20	3 SDCM color; One flux, One Vf bin	DC Forward Current: 50mA; LED Junction Temperature: 150°C	83

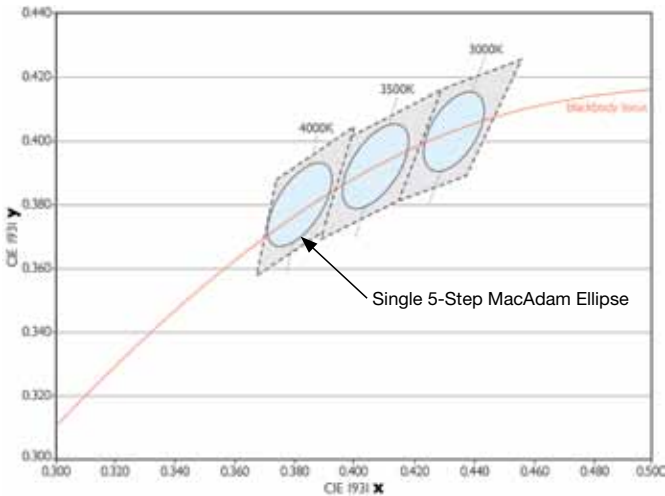
Please refer to “Freedom From Binning” 3-step MacAdam Ellipse charts on page 16.

LUXEON® High Power LEDs *(continued)*

“FREEDOM FROM BINNING” 3-STEP MACADAM ELLIPSE



“FREEDOM FROM BINNING” 5-STEP MACADAM ELLIPSE



LUXEON K ("Freedom From Binning", tested at $T_j = 85^\circ\text{C}$)

Color	Part Number	Emitter Count	Nominal CCT	Minimum CRI	Typical CRI	Min Flux (lumens)	Typ Flux (lumens)	Test Forward Current (mA)	Maximum Ratings	Typical Efficacy (lm/W)
Neutral-White	LXK8-PW40-0004	4	4000K	80	85	355	410	DC Forward Current: 350mA	DC Forward Current: 1050mA	112
	LXK8-PW40-0008	8	4000K	80	85	800	815			111
	LXK8-PW40-0012	12	4000K	80	85	1175	1240			112
	LXK8-PW40-0016	16	4000K	80	85	1620	1650			112
	LXK8-PW40-0024	24	4000K	80	85	2300	2475			112
Warm-White	LXK8-PW30-0004	4	3000K	80	85	330	370	LED Junction Temperature: 85°C	LED Junction Temperature: 125°C	101
	LXK8-PW30-0008	8	3000K	80	85	730	740			101
	LXK8-PW30-0012	12	3000K	80	85	1070	1125			102
	LXK8-PW30-0016	16	3000K	80	85	1475	1500	LED Junction Temperature: 85°C	LED Junction Temperature: 125°C	102
	LXK8-PW30-0024	24	3000K	80	85	2100	2250			102
	LXK8-PW27-0004	4	2700K	80	85	310	345			94
	LXK8-PW27-0008	8	2700K	80	85	680	690	94		
	LXK8-PW27-0012	12	2700K	80	85	990	1045	95		
	LXK8-PW27-0016	16	2700K	80	85	1380	1395	95		
LXK8-PW27-0024	24	2700K	80	85	1960	2090	95			

Note: Mounted directly on a heat sink using TE Connectivity Solderless LED Socket, Type LK.
Please refer to "Freedom From Binning" 3-step MacAdam Ellipse charts above.

TE CONNECTIVITY SOLDERLESS LED SOCKET, TYPE LK

Part number	Description
2173470-1	Solderless LED socket, type LK for different LUXEON K packages

LUXEON C

Color	Part Number	CCT Range (K)	Minimum CRI	Min Flux (lumens)	Typ Flux (lumens)	Test Forward Current (mA)	Maximum Ratings	Typical Efficacy (lm/W)
Cool-White	LXCL-EYW4	ANSI 5000 - 5700	75	80	95	350	DC Forward Current: 500mA LED Junction Temperature: 135°C	92

LUXEON REBEL ES

Color	Part Number	CCT Range	Minimum CRI	Typical CRI	Min Flux (lumens)	Typ Flux (lumens)	Test Forward Current (mA)	Maximum Ratings	Typical Efficacy (lm/W)	
									@ 350mA	@ 700mA
Cool-White	LXML-PWC2	4500K - 10000K	60	70	200	235	700	DC Forward Current: 1000mA LED Junction Temperature: 150°C	135	112
	LXW8-PW50*	5000K	80	85	180	200			111	95
Neutral-White	LXML-PWN2	3500K - 4500K	60	65	200	230			130	110
	LXW8-PW35*	3500K	80	85	160	185			103	88
	LXW8-PW40*	4000K	80	85	170	190			106	90
Warm-White	LXH7-PW40*	4000K	70	75	180	205			114	98
	LXW9-PW27*	2700K	90	95	120	135			75	64
	LXW9-PW30*	3000K	90	95	120	145			81	69

* ANSI binned

LUXEON REBEL PLUS (Tested at $T_j = 85^\circ\text{C}$)

Color	Part Number	Nominal CCT	Minimum CRI	Typical CRI	Min Flux (lumens)	Typ Flux (lumens)	Test Forward Current (mA)	Maximum Ratings	Typical Efficacy (lm/W)
Cool-White	LX18-P150-Y	ANSI 5000K	80		95	106	350	DC Forward Current: 700mA; LED Junction Temperature: 150°C	110
Neutral-White	LX18-P140-Y	ANSI 4000K	80		90	103	350		107
	LX18-P135-Y	ANSI 3500K	80		90	98	350		101
Warm-White	LX18-P130-Y	ANSI 3000K	80		85	95	350		98
	LX18-P127-Y	ANSI 2700K	80		80	89	350		92

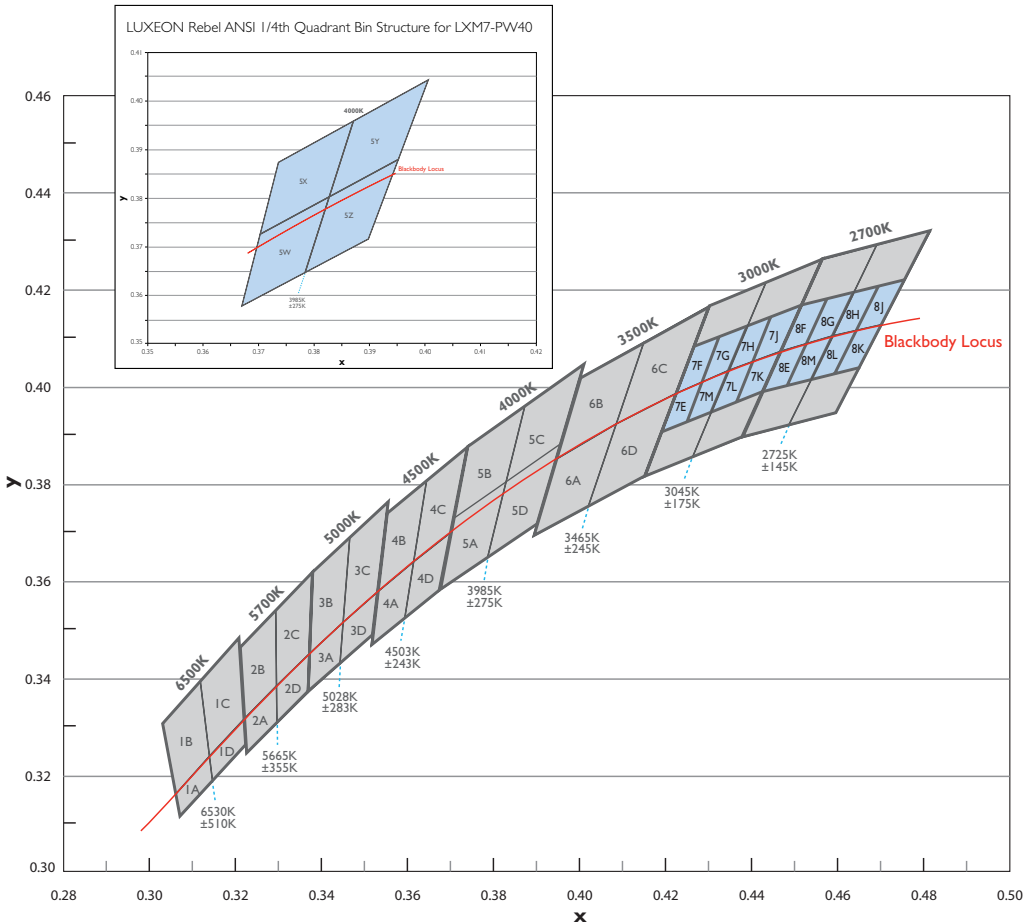
Note: Y stands for 3 for 3-step and 5-step MacAdam Ellipse.



LUXEON REBEL ILLUMINATION PORTFOLIO

Color	Part Number	Nominal CCT	Minimum CRI	Typical CRI	Min Flux (lumens)	Typ Flux (lumens)	Test Forward Current (mA)	Maximum Ratings	Typical Efficacy (lm/W)	
Neutral-White	LXM3-PW51	ANSI 4000K	80	85	75	85	350	DC Forward Current: 700mA	81	
	LXM7-PW40	ANSI 4000K	70	75	90	100			95	
	LXM3-PW61	ANSI 3500K	80	85	67	80			76	
Warm-White	LXM8-PW30	ANSI 3000K	80	85	75	85		81	LED Junction Temperature: 135°C	73
	LXM3-PW71	ANSI 3000K	80	85	66	77		76		
	LXM8-PW27	ANSI 2700K	80	85	70	80		70		
	LXM3-PW81	ANSI 2700K	80	85	65	73				

LUXEON REBEL ILLUMINATION PORTFOLIO ANSI BINNING STRUCTURE



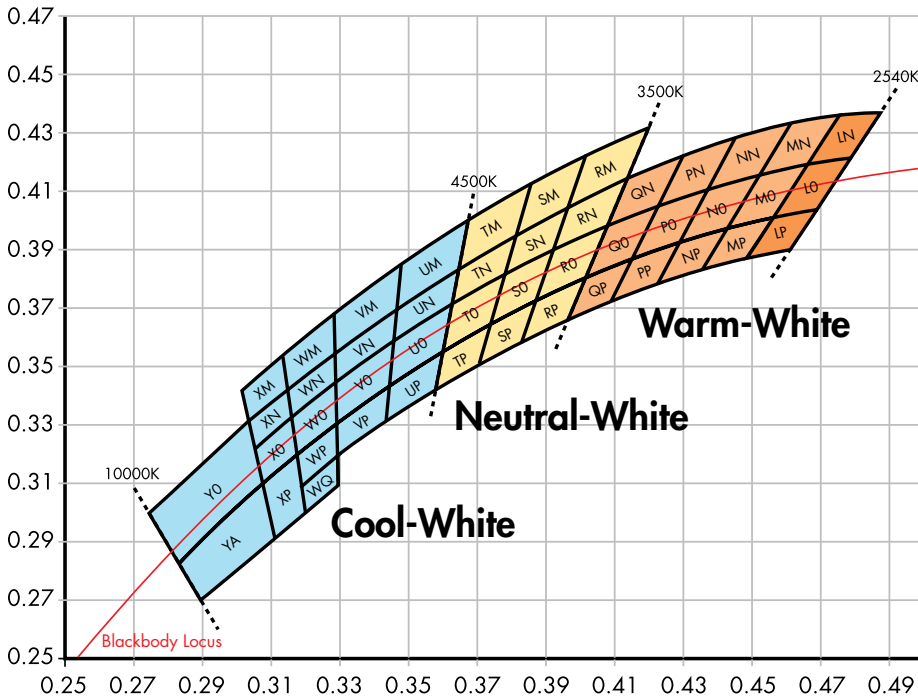
LUXEON® High Power LEDs *(continued)*

LUXEON REBEL GENERAL PURPOSE WHITE PORTFOLIO

Color	Part Number	CCT Range	Min Flux (lumens)	Typ Flux (lumens)	Test Forward Current (mA)	Maximum Ratings	Typical Efficacy (lm/W)
Cool-White	LXML-PWC1-0090	4500K - 10000K	90	95	350	DC Forward Current: 1000mA LED Junction Temperature: 150°C	90
	LXML-PWC1-0100	4500K - 10000K	100	105			100
	LXML-PWC1-0120	4500K - 10000K	120	125			119
Neutral-White	LXML-PWN1-0090	3500K - 4500K	90	95			90
	LXML-PWN1-0100	3500K - 4500K	100	105			100
	LXML-PWN1-0120	3500K - 4500K	120	125			119
Warm-White	LXML-PWW1-0050*	2540K - 3500K	50	55	52		
	LXML-PWW1-0060*	2540K - 3500K	60	65	62		

*Please consult Future Lighting Solutions for supportability

LUXEON REBEL WHITE BINNING STRUCTURE



CCT RANGE
Cool-White
 19 color bins
 10,000K to 4,500K
Neutral-White
 12 color bins
 4,500K to 3,500K
Warm-White
 15 color bins
 3,500K to 2,540K



LUXEON REBEL COLOR PORTFOLIO

Color	Part Number	Wavelength Range (nm)	Min Flux (lumens or mW)	Typ Flux (lumens or mW)	Test Forward Current (mA)	Maximum Ratings	Typical Efficacy (lm/W) or Radiant Efficacy (%)				
Green	LXML-PM01-0080	520 - 550	80	88	350	DC Forward Current: 1000mA LED Junction Temperature: 150°C	86				
	LXML-PM01-0090	520 - 550	90	95			93				
	LXML-PM01-0100	520 - 550	100	102			100				
Cyan	LXML-PE01-0060	490 - 520	60	67			700	DC Forward Current: 1000mA LED Junction Temperature: 150°C	66		
	LXML-PE01-0070	490 - 520	70	76					75		
	LXML-PE01-0080	490 - 520	80	83					81		
Blue	LXML-PB01-0018	460 - 490	18.1	22					350	DC Forward Current: 1000mA LED Junction Temperature: 150°C	21
	LXML-PB01-0023	460 - 490	23.5	28							26
	LXML-PB01-0030	460 - 490	30	35							33
Royal Blue	LXML-PB01-0040	460 - 490	40	41							700
	LXML-PR01-0425	440 - 460	425	480	44%						
	LXML-PR01-0500	440 - 460	500	520	48%						
Deep Red	LXM3-PD01	440 - 460	800	890	350	DC Forward Current: 1000mA LED Junction Temperature: 150°C					
		440 - 460	900	940			44%				
		440 - 460	1000	1030			49%				
		440 - 460	1100	1120			53%				
Red	LXML-PD01-0030	650-670	350	360			700	DC Forward Current: 700mA LED Junction Temperature: 135°C	46%		
		650-670	300	320					41%		
		650-670	260	290					37%		
		LXML-PD01-0040	620 - 645	30					38	37	
		LXML-PD01-0050	620 - 645	40					46	41	
		LXM2-PD01-0040*	620 - 645	40					48	65	
Red-Orange	LXM2-PD01-0050*	620 - 645	50	52	350	DC Forward Current: 700mA LED Junction Temperature: 135°C			71		
		LXM2-PD01-0050*	620 - 645	50					53	72	
		LXML-PH01-0040	610 - 620	40					47	57	
		LXML-PH01-0050	610 - 620	50					56	63	
		LXML-PH01-0060	610 - 620	60			62	97			
		LXM2-PH01-0060*	610 - 620	60			67	91			
Amber	LXM2-PH01-0070*	610 - 620	70	72			700	DC Forward Current: 700mA LED Junction Temperature: 130°C	98		
		LXML-PL01-0023	584.5 - 597	23					28	28	
		LXML-PL01-0030	584.5 - 597	30					38	37	
		LXML-PL01-0040	584.5 - 597	40					48	46	
		LXML-PL01-0050	584.5 - 597	50	54	51					
		LXML-PL01-0060	584.5 - 597	60	61	60					
PC Amber	LXM2-PL01-000	588 - 592	60	69	350	DC Forward Current: 700mA LED Junction Temperature: 130°C			65		
		588 - 592	70	78					73		
		588 - 592	80	84					79		
		588 - 592	90	91					85		
		588 - 592	100	102			95				

* Low Vf parts.

LUXEON Z COLOR PORTFOLIO

Color	Part Number	Wavelength Range (nm)	Min Flux (lumens or mW)	Typ Flux (lumens or mW)	Test Forward Current (mA)	Maximum Ratings	Typical Efficacy (lm/W) or Radiant Efficacy (%)
Green	LXZ1-PM01	520-540	72	76	500	DC Forward Current: 1000mA; LED Junction Temperature: 150°C	3.1
		520-540	80	84	500		54
		520-540	88	92	500		59
		520-540	96	98	500		63
		520-540	104	106	500		71
Cyan	LXZ1-PE01	490-508	48	54	500		35
		490-508	56	60	500		39
		490-508	64	68	500		44
		490-508	72	73	500		48
Blue	LXZ1-PB01	460-480	24	30	500		21
		460-480	32	38	500	26	
		460-480	40	44	500	30	
		460-480	48	50	500	34	
Royal-Blue	LXZ1-PR01	440-460	500	530	500	37%	
		440-460	550	570	500	40%	
		440-460	600	620	500	43%	
Deep Red	LXZ1-PA01	650-670	250	280	500	26%	
		650-670	300	330	500	32%	
		650-670	350	360	500	34%	
Red	LXZ1-PD01	620-645	40	44	500	42	
		620-645	48	52	500	50	
		620-645	56	57	500	54	
Red-Orange	LXZ1-PH01	610-620	56	60	500	57	
		610-620	64	66	500	63	
		610-620	72	74	500	69	
Amber	LXZ1-PL01	584.5-597	48	54	500	51	
		584.5-597	56	60	500	57	
		584.5-597	64	66	500	63	

LUXEON Z WHITE

Color	Part Number	Nominal CCT	Minimum CRI	Typical CRI	Min Flux (lumens)	Typ Flux (lumens)	Test Forward Current (mA)	Maximum Ratings	Typical Efficacy (lm/W)
Neutral-White	LXZ1-4070	4000K	70		144	148	500	DC Forward Current: 700mA LED Junction Temperature: 130°C	102
		4000K	70		134	140	500		96
		4000K	70		124	130	500		90

Mid Power LEDs

LUXEON MID POWER 5630 SERIES (tested at $T_j = 25^\circ\text{C}$)

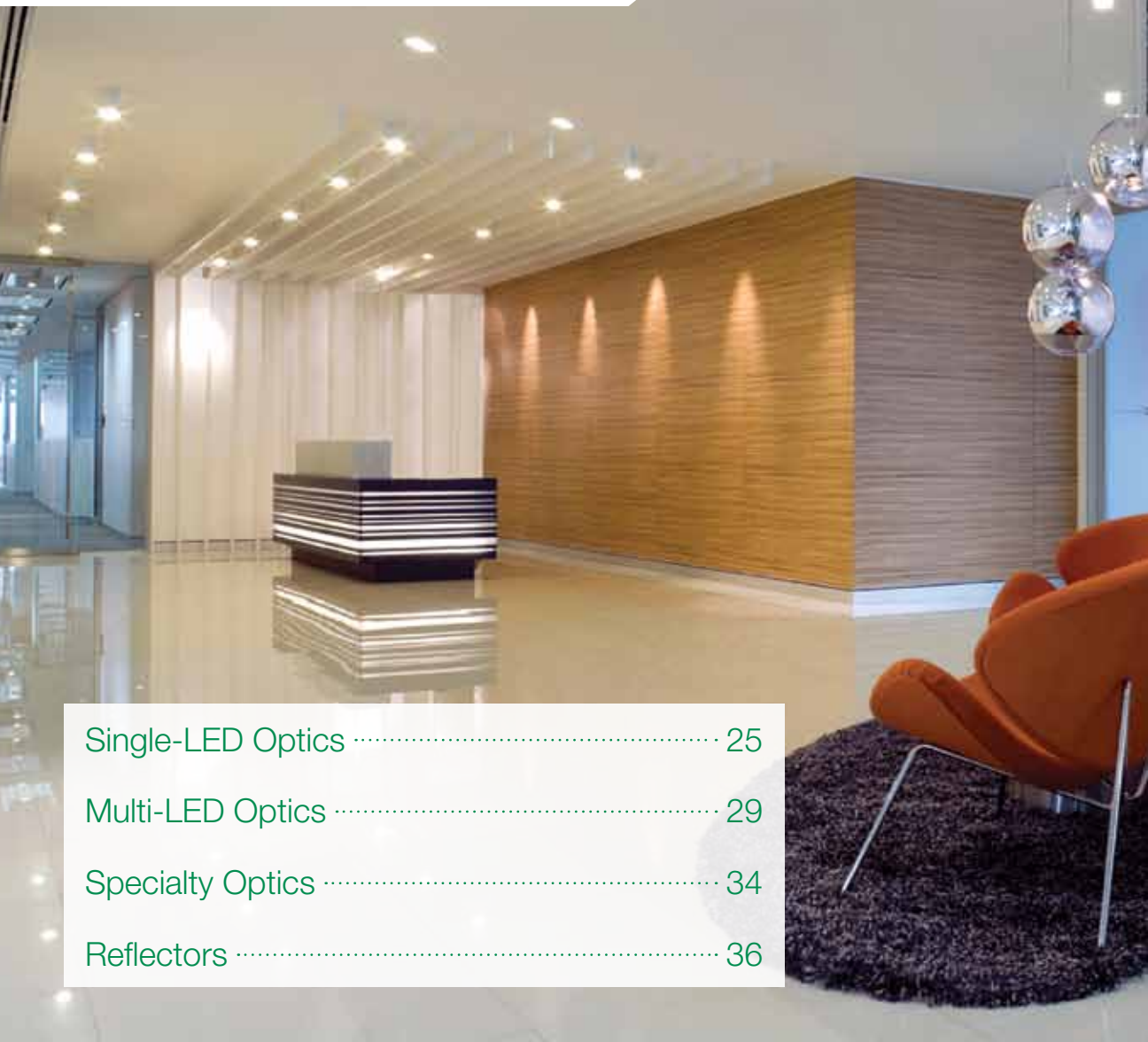
Color	Part Number	CCT	Minimum CRI	Typical CRI	Min Flux (lumens)	Typ Flux (lumens)	Test Forward Current (mA)	Maximum Ratings	Typical Efficacy (lm/W)
Cool-White	MXL8-PW65	6500K	80	82	30	34	100	DC Forward Current: 150mA	110
	MXL8-PW50	5000K	80	82	30	33			106
Neutral-White	MXL8-PW40	4000K	80	82	30	32		LED Junction Temperature: 115°C	103
Warm-White	MXL8-PW35	3500K	80	82	30	31			100
	MXL8-PW30	3000K	80	82	26	30			97

PHILIPS LUMILEDS MID POWER 3535 SERIES (tested at $T_j = 25^\circ\text{C}$)

Color	Part Number	Nominal CCT	Minimum CRI	Typical CRI	Min Flux (lumens)	Typ Flux (lumens)	Test Forward Current (mA)	Maximum Ratings	Typical Efficacy (lm/W)
Cool-White	MXM8-PW65-0000	6500K	80	82	30	35	100	DC Forward Current: 150mA; LED Junction Temperature: 115°C	113
	MXM8-PW57-0000	5700K	80	82	30	35	100		113
Neutral-White	MXM8-PW50-0000	5000K	80	82	30	35	100		113
	MXM8-PW40-0000	4000K	80	82	30	35	100		
Warm White	MXM8-PW35-0000	3500K	80	82	30	33	100		
	MXM8-PW30-0000	3000K	80	82	30	33	100		106
	MXM8-PW27-0000	2700K	80	82	28	32	100	103	



OPTICS



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Single-LED Optics

NARROW BEAM LENS

Supplier	Part Number	Optic			Optic Holder Part Number	Rebel	Rebel ES
		Beam Angle (°)	Diameter (mm)	Shape			
Carclo Optics*	10193	9	20	Circular	10235, 10236, 10237, Triple Holder	✓	✓
	10194	12	20		10235, 10236, 10237, Triple Holder	✓	✓
	10048	6.7	26.5		10442, 10452, 10462, 10472, 10482, 10492	✓	✓
	10124	10.1	26.5		10442, 10452, 10462, 10472, 10482, 10492	✓	✓
	10412	18	10	Square	10235, 10236, 10237, Triple Holder	✓	✓
	10417	18	10	Circular	—	✓	✓
	10755	5.7	30		10765	✓	
	10756	10.5	30		10765	✓	
Fraen*	FLP-N4-RE-0R	11	19.7		Circular	—	✓
	FLP-N4-RS-HRF	11	21.8	✓			✓
	FLP-N4-RS-HRFW	11	21.8	✓			✓
	FLP-N4-RS-HRFT	11	21.8	✓			✓
	FHS-HNB1-LL01-0	6	27	✓			✓
	FHS-N1-SPL-HRL	6	31	✓			✓
Khatod Optoelectronic*	PL115006	10	15	Hexagonal	—	✓	
LEDIL*	FP11086_LISA2-RS-CLIP	18	9.9	Circular	—	✓	✓
	FP11056_LISA2-RS-PIN	18	9.9			✓	✓
	FA12038_TINA-RS	16	16.1				✓
	FA12310_TINA-D	17	16.1				✓
	FA11905_TINA3-S	11	16.1			✓	✓
	CA11663_HEIDI-RS	7.5	21.6			✓	
	CA11264_HEIDI-D	10.0	21.6			✓	
	CA12242_HEIDI-SS	13.0	21.6			✓	
	CA11929_LR2-RS	11	21.6				✓
	CA11930_LR2-D	14	21.6				✓
CA12062_EMILY-SS	10	26		✓			
LedLink*	LL01CR-DF25L	13.6	11.8	Circular	—	✓	
	LL01ZZ-EX10L	8.6	21			✓	
	LL01ZZ-EX25L	13.8	21			✓	
	LL01LU-DF25L-M2	13.6	11.8			✓	
	LL01LU-EX10L-M2	8.6	21			✓	
	LL01LU-EX25L-M2	13.8	21			✓	✓
Polymer Optics*	120/180	12	15	Circular	—	✓	✓
	185/180	12	15			✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

Single-LED Optics *(continued)*

MEDIUM BEAM LENS

Supplier	Optic			Shape	Optic Holder Part Number	Rebel	Rebel ES
	Part Number	Beam Angle (°)	Diameter (mm)				
Carclo Optics*	10757	20.6	30	Circular	10765	✓	
	10208	19	20		10235, 10236, 10237, Triple Holder	✓	
	10195	19	20		—	✓	✓
	10209	22	20		—	✓	
	10108	20.3	26.5		10235, 10236, 10237, Triple Holder	✓	✓
	10413	21	10		10442, 10452, 10462, 10472, 10482, 10492	✓	
Fraen*	FLT-M1-RE-OR	16	9,6	Circular	—	✓	✓
	FLP-M4-RE-OR	22	19,7			✓	✓
	FLP-M4-RS-HRF	22	21.8			✓	✓
	FLP-M4-RS-HRFW	22	21.8			✓	✓
	FLP-M4-RS-HRFT	22	21.8			✓	✓
	FHS-HMB1-LL01-0	25	27			✓	✓
	FHS-M1-SPL-HRL	25	31			✓	✓
FLT-M1-RE-HS	16	11	Square	✓	✓		
Khatod Optoelectronic*	PL115025	20	15	Hexagonal	—	✓	
LEDIL*	FP11072_LISA2-M-CLIP	26	9.9	Circular	—	✓	✓
	FP10992_LISA2-M-PIN	25	9.9			✓	✓
	FA11210_TINA-M	32	16.1			✓	
	FA12040_TINA-M	28	16.1			✓	✓
	CA11265_HEIDI-M	27	21.6			✓	
	CA11931_LR2-M	22	21.6			✓	✓
CA12064_EMILY-M	18	26	✓	✓			
LedLink*	LL01CR-DF40L	26.6	11.8	Circular	—	✓	
	LL01ZZ-EX40L	22.7	21			✓	✓
	LL01LU-DF40L-M2	26.6	11.8			✓	
	LL01LU-EX40L-M2	22.7	21			✓	
Polymer Optics*	201/180	30	15	Hexagonal	—	✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.



WIDE BEAM LENS

Supplier	Optic			Shape	Optic Holder Part Number	Rebel	Rebel ES
	Part Number	Beam Angle (°)	Diameter (mm)				
Carclo Optics*	10196	35	20	Circular	10235, 10236, 10237, Triple Holder	✓	✓
	10260	33.2	26.5		10442, 10452, 10462, 10472, 10482, 10492	✓	✓
	10208	30.2	20		10235, 10236, 10237, 10432, 10433, 10434, 10435		✓
	10209	45.1	20		10235, 10236, 10237, 10432, 10433, 10434, 10435		✓
	10758	31.9	30		10765	✓	
	10414	43	10	Square		✓	✓
	10413	30.4	10		—		✓
Fraen*	FLT-W1-RE-OR	38	9,6	Circular		✓	✓
	FLT-W1-RE-HS	38	11	Square		✓	✓
	FLP-W4-RE-OR	40	19,7	Circular		✓	✓
	FLP-W4-RS-HRF	40	21.8		—	✓	✓
	FLP-W4-RS-HRFW	40	21.8		✓	✓	
	FLP-W4-RS-HRFT	40	21.8		✓	✓	
	FHS-HWB1-LL01-0	45	27		✓	✓	
FHS-W1-SPL-HRL	45	31	✓	✓			
Khatod Optoelectronic*	PL115040	30	15	Hexagonal	—	✓	
LEDIL*	FP11073_LISA2-W-CLIP	34	9.9	Circular		✓	✓
	FP10993_LISA2-W-PIN	34	9.9		—	✓	✓
	FA11211_TINA-W	44	16.1		✓		
	FA11824_TINA3-W	40	16.1		✓		
	CA11268_HEIDI-W-RE	38	21.6		✓		
LedLink*	LL01CR-DF80L	44.3	11.8	Circular		✓	
	LL01CR-DF100L	58.4	11.8		—	✓	
	LL01ZZ-EX60L	39.6	21		✓	✓	
	LL01LU-EX60L -M2	39.6	21		✓		
Polymer Optics*	124/180	50	15	Hexagonal	—	✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

Single-LED Optics *(continued)*

ELLIPTICAL BEAM LENS

Supplier	Optic				Optic Holder Part Number	Rebel	Rebel ES
	Part Number	Beam Angle (°)	Diameter (mm)	Shape			
Carclo Optics*	10415	46 x 19, 43.9 x 23*	10	Square	—	✓	✓
	10198	12.2x47.7	20	Circular	10235, 10236, 10237, 10432, 10433, 10434, 10435	✓	✓
	10197	40 x 10, 47.5 x 11.9*	20		10235, 10236, 10237, Triple Holder	✓	✓
	10049	43.5x7.1	26.5	Circular	10442, 10452, 10462, 10472, 10482, 10492	✓	✓
	10224	47.7 x 7.9, 43.2x9.1*	26.5		10442, 10452, 10462, 10472, 10482, 10492	✓	✓
	10234	44.4 x 6.6, 45.5 x 8.8*	26.5		10442, 10452, 10462, 10472, 10482, 10492	✓	✓
	10759	48.5 x 6.8	30		10765	✓	✓
	10760	6.8 x 48.5	30	10765	✓	✓	
Fraen*	FLT-E1-RE-OR	20x35	9.6	Circular	—	✓	✓
	FLP-E4-RE-OR	10x45	19.7			✓	✓
	FLP-E4-RS-HRF	10x45	21.8			✓	✓
	FLP-E4-RS-HRFW	10x45	21.8			✓	✓
	FLP-E4-RS-HRFT	10x45	21.8			✓	✓
	FLP-E5-RE-OR	10x25	19.7			✓	✓
	FLP-E5-RS-HRF	10x25	21.8			✓	✓
	FLP-E5-RS-HRFW	10x25	21.8			✓	✓
	FLP-E5-RS-HRFT	10x25	21.8			✓	✓
	FLT-E1-RE-HS	20x35	11			Square	✓
LEDIL*	FP11126_LISA2-O-PIN	48 x 20	9.9	Circular	—	✓	✓
	FP11853_LISA2-O-90-PIN	48 x 20	9.9			✓	
	FP11858_LISA2-O-90-CLIP	48 x 20	9.9			✓	
	FA11203_TINA-O	36 x 14	16.1			✓	
	FA11870_TINA3-OO	43 x 58	16.1			✓	✓
	CA11266_HEIDI-O	11 x 52	21.6			✓	
	CA11267_HEIDI-O-90	10 x 52	21.6			✓	
	CA12066_EMILY-O	44 x 10	26				✓
CA12068_EMILY-O-90	44 x 10	26		✓			
LedLink*	LL01CR-DF3065L	16.8x31.8	11.8	Circular	—	✓	
	LL01LU-DF3065L-M2	16.8x31.8	11.8			✓	
	LL01LU-ABW1050L	10x50	34x29			Rectangular	✓
Polymer Optics*	126/180	12 x 50	15	Hexagonal	—	✓	✓
	290	25 x 130	30	Rectangular	—	✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.



TRIPLE OPTIC HOLDER FOR 20MM OPTICS

Supplier	Part Number	Diameter (mm)	Shape	Leg Pin Length	Color	Rebel	Rebel ES
Carclo Optics*	10309	50	Circular	Short Leg (0.8mm pin)	Black	✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

Multi-LED Optics

TRI-LENS NARROW BEAM

Supplier	Optic				Optic Holder Part Number	Rebel	Rebel ES
	Part Number	Beam Angle (°)	Diameter (mm)	Shape			
Fraen*	FT3-N1-RE-H	10	50	Circular		✓	✓
	FT3-N1-RE-HT	10	50				
Khatod Optoelectronic*	PL114306	13	23	Circular		✓	✓
LEDIL*	C11916_SATU-S	18	21.8	Circular		✓	✓
	C10754_CUTE-3-SS	12	35				
	C10891_GT3-S	16	35				
	C11606_ANNA-50-3-S	16	50				
	C11710_ANNA-40-3-S	12	40				
LedLink*	LL03LU-DM15L	15	23.1	Circular		✓	✓
	LL03LU-DO15L	15	35				
Polymer Optics*	181	12	36	Hexagonal		✓	✓
	181/160	12	36				
	181/163	12	36				

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

Multi-LED Optics *(continued)*

TRI-LENS MEDIUM BEAM

Supplier	Optic			Shape	Optic Holder Part Number	Rebel	Rebel ES
	Part Number	Beam Angle (°)	Diameter (mm)				
Carclo Optics*	10507	18	20	Circular	—	✓	
	10508	22	20			✓	
	10511	22	20			✓	
Fraen*	FT3-M1-RE-H	25	50			✓	✓
	FT3-M1-RE-HT	25	50			✓	✓
Khatod Optoelectronic*	PL114325	23	23			✓	✓
LEDIL*	C11602_SATU-M	24	21.8			✓	
	C11334_CUTE-3-M	22	35			✓	✓
	C10892_GT3-M	28	35			✓	
	C11711_ANNA-40-3-M	24	40			✓	✓
LedLink*	LL03LU-DM25L	19.5	23.1			✓	✓
	LL03LU-DO25L	24.7	35			✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

TRI-LENS WIDE BEAM

Supplier	Optic			Shape	Optic Holder Part Number	Rebel	Rebel ES
	Part Number	Beam Angle (°)	Diameter (mm)				
Carclo Optics*	10509	40	20	Circular	—	✓	
Fraen*	FLP3-W4-RE-HL	39	50			✓	✓
Khatod Optoelectronic*	PL114340	30	23			✓	✓
LEDIL*	C11544_SATU-W	32	21.8			✓	
	C10756_CUTE-3-W	38	35			✓	✓
	C10893_GT3-W	38	35			✓	
	C11624_GT3-VVV	46	35			✓	
LedLink*	C11712_ANNA-40-3-W	29	40			✓	✓
	LL03CR-RX60L	33.9	35			✓	✓
	LL03LU-DM40L	37.6	23.1			✓	✓
	LL03LU-DO40L	44.9	35			✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

TRI-LENS ELLIPTICAL BEAM

Supplier	Optic			Shape	Optic Holder Part Number	Rebel	Rebel ES
	Part Number	Beam Angle (°)	Diameter (mm)				
Carclo Optics*	10510	46 x 19	20	Circular	—	✓	
Fraen*	FT3-W1-RE-H	45	50	Circular		✓	✓
	FT3-W1-RE-HT	45	50			✓	✓
LEDIL*	C11917_SATU-O	20 x 44	21.8	Circular		✓	✓
Polymer Optics*	181/162	12 x 50	36	Hexagonal		✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.



TRI-LENS COLOR MIXING

Supplier	Optic			Shape	Optic Holder Part Number	Rebel	Rebel ES
	Part Number	Beam Angle (°)	Diameter (mm)				
Polymer Optics*	181	12	36	Hexagonal	Included	✓	✓
	181/160	12	36			✓	✓
	181/161	50	36			✓	✓
	181/162	12 x 50	36			✓	✓
	181/163	12	36			✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

QUAD-LENS NARROW BEAM

Supplier	Optic			Shape	Optic Holder Part Number	Rebel	Rebel ES
	Part Number	Beam Angle (°)	Diameter (mm)				
Khatod Optoelectronic*	PL115206	10	35	Circular	-	✓	✓
LEDIL*	C10971_GT4-S	17	35			✓	
LedLink*	LL04LU-DN15L	12.5	25.4			✓	
	LL04LU-DO15L	11.9	35			✓	

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

QUAD-LENS MEDIUM BEAM

Supplier	Optic			Shape	Optic Holder Part Number	Rebel	Rebel ES
	Part Number	Beam Angle (°)	Diameter (mm)				
Carclo Optics*	10621	18.8	24	Circular	-	✓	
	10622	19.2	24			✓	
	10623	28	24			✓	
	10624	42.8	24			✓	
	10610	18.7	20	Square		✓	
	10611	19.1	20			✓	
	10612	28.3	20			✓	
	10613	43.2	20			✓	
Fraen*	FD4-M1-RE-0	25	41	Circular		✓	✓
Khatod Optoelectronic*	PL115225	20	35	Circular		✓	✓
LEDIL*	C10972_GT4-M	26	35	Circular		✓	
LedLink*	LL04ED-GK40L	18	37	Circular		✓	✓
	LL04LU-DN25L	16.9	25.4		✓	✓	
	LL04LU-DO25L	17.3	35		✓	✓	

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

Multi-LED Optics *(continued)*

QUAD-LENS WIDE BEAM

Supplier	Optic				Optic Holder Part Number	Rebel	Rebel ES
	Part Number	Beam Angle (°)	Diameter (mm)	Shape			
Fraen*	FL4-M1-RS.HT	22	50	Circular	-	✓	✓
Khatod Optoelectronic*	PL115240	30	35			✓	✓
LEDIL*	C10973_GT4-W	38	35			✓	
	C10974_GT4-WW	60	35			✓	

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

QUAD-LED COLOR MIXING OPTICS

Supplier	Optic				Optic Holder Part Number	Rebel	Rebel ES
	Part Number	Beam Angle (°)	Diameter (mm)	Shape			
Polymer Optics*	230	10	37.5	Hexagonal	Included	✓	✓
	230/265	30	37.5			✓	✓
	230/266	50	37.5			✓	✓
	230/267	10 x 30	37.5			✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

5-CELL OPTICS

Supplier	Beam Type	Optic				Optic Holder Part Number	Rebel	Rebel ES
		Part Number	Beam Angle (°)	Diameter (mm)	Shape			
LEDIL*	Narrow Beam	C11713_ANNA-40-5-S	12	40	Circular	—	✓	✓
	Medium Beam	C11714_ANNA-40-5-M	24				✓	✓
	Wide Beam	C11715_ANNA-40-5-W	29*				✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.



7-CELL OPTICS

Supplier	Beam Type	Optic			Shape	Optic Holder Part Number	Rebel	Rebel ES
		Part Number	Beam Angle (°)	Diameter (mm)				
Khatod Optoelectronic*	Narrow Beam	PL121106	13	39	Circular	—	✓	✓
	Medium Beam	PL121125	20	39			✓	✓
	Wide Beam	PL121140	30	39			✓	✓
LEDIL*	Narrow Beam	C11670_ANNA-50-7-S	13	50	Circular	—	✓	✓
		C11716_ANNA-40-7-S	12	40			✓	✓
	Medium Beam	C11679_ANNA-50-7-M	18	50			✓	✓
		C11717_ANNA-40-7-M	24	40			✓	✓
	Wide Beam	C11682_ANNA-50-7-W	29	50			✓	✓
		C11718_ANNA-40-7-W	29	40			✓	✓
LedLink*	Medium Beam	LL07CR-RX40L	29.6	50	Cluster Optic	—	✓	✓
		LL07ED-GK40L	18.7	47			✓	✓
		LL07ZZ-FU15L	15.8	50.3			✓	✓
	Wide Beam	LL07CR-RX60L	42.6	50			✓	✓
Polymer Optics*	Narrow Beam	261	12	39.15	Cluster Optic	—	✓	✓
		264 (diffuse)	12				✓	✓
	Medium Beam	262	50				✓	✓
	Concentrator	263	12 (spot)				✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

LINEAR

Supplier	Optic				Shape	Rebel	Rebel ES
	Part Number	Beam Angle (°)	Diameter (mm)	Length (feet)			
Carclo Optics*	10397	32	10	4	Linear	✓	
	10398	32	10	1		✓	
Polymer Optics*	210	30	14	4		✓	

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

Specialty Optics

SIDE EMITTING LENS

Supplier	Optic				Optic Holder Part Number	Rebel	Rebel ES
	Part Number	Beam Angle (°)	Diameter (mm)	Shape			
Carclo Optics*	10267	8.4	20		—	✓	
Fraen*	F360L-3-RE-OS	71**	11	Square	—	✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

** Peak Intensity Angle

CONCENTRATOR LENS

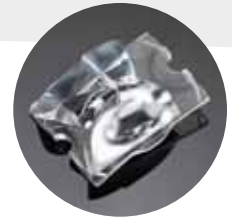
Supplier	Optic			Optic Holder Part Number	Rebel	Rebel ES
	Part Number	Diameter (mm)	Shape			
Polymer Optics*	141/180	15	Hexagonal	Included	✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

ULTRA-WIDE ANGLE OPTICS

Supplier	Optic				Optic Holder Part Number	Rebel	Rebel ES
	Part Number	Beam Angle (°)	Diameter (mm)	Shape			
Carclo Optics*	10403	120	19.7	Circular	—	✓	✓
	10406	130	19.7			✓	✓
	10620	180	19.7			✓	✓
	10628	100	19.7			✓	✓
LEDIL*	FP11951_LISA2-WWW-PIN	73.5	9.9	Circular	—	✓	
	FP11952_LISA2-WWW-CLIP	73.5	9.9			✓	
	FA11825_TINA3-WW	50	16.1			✓	✓
	FA11826_TINA3-WWW	77	16.1			✓	✓
Polymer Optics*	290	25 x 130	30	Rectangular	Included	✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.



STREETLIGHT OPTICAL SOLUTIONS

Supplier	Optic			Optical Characteristics	Rebel	Rebel ES
	Part Number	Diameter (mm)	Shape			
Fraen*	F2L3-1-RE	75 x 35	Linear	ME3a with Surround Ratio 4:1 pole height to spacing ratio	✓	✓
	F2L3-2-RE	75 x 35		MExx no Surround Ratio 4:1 pole height to spacing ratio	✓	✓
LEDIL*	CA12050_STRADA-FT	15.4 x 19.6	Rectangular	Type IV: Use in 50/50 mix for Type IV pattern	✓	✓
	CA12087_STRADA-FW	15.4 x 19.6			✓	✓
	CA10950_STRADA-B2	19.6 x 15.5		Type I or III: PCB tilt required to achieve Type II pattern (retrofit applications)	✓	✓
	CA11253_STRADA-C2	19.6 x 15.6		Type V	✓	✓
	C11255_STRADA-DW	19.6 x 15.7		Type II: When used in combination with STRADA-B Family or STRADA-C Family	✓	✓
	CA11256_STRADA-DW	19.6 x 15.7			✓	✓
	CA11416_STRADA-T-DN	19.8 x 15.5		Type III: Use in 50/50 mix for Type III pattern	✓	✓
	CA11426_STRADA-T-DW	19.6 x 15.5			✓	✓
	C11918_STRADA-T-6X1-DNW	119.8 x 25.2			Type III	✓
	LedLink*	LL01CR-AU85135L		18 x 10.1	Rectangular	—
LL01CR-FT60135L		18 x 9.3	✓	✓		
LL01CR-KM6090L		17.6 x 11.6	✓	✓		
LL24CR-AU75135L		120 x 100	✓	✓		
Polymer Optics*	290	25 x 130	Rectangular	—	✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

LUXEON M OPTICS

Supplier	Beam Type	Optic			Optic Holder Part Number
		Part Number	Beam Angle (°)	Diameter (mm)	
Carclo Optics*	Narrow Beam Lens	10755, 10756	19.5	30	—
	Medium Beam Lens	10757	27.5	30	
	Wide Beam Lens	10758	36.6	30	

* Refer to datasheets for specific beam angles.

LUXEON S OPTICS

Supplier	Beam Type	Optic			Optic Holder Part Number
		Part Number	Beam Angle (°)	Diameter (mm)	
LEDIL*	Narrow Beam Lens	CA12090_VENLA-S-IRIS	16.5	45	—
Carclo Optics*	Medium	10755	17.6	30	Circular
		10756	20.1	30	
	Wide	10757	28.4	30	
		10758	45.8	30	
	Elliptical	10759	45.3x21.4	30	

* Refer to datasheets for specific beam angles.

Reflectors



NARROW BEAM REFLECTORS

Supplier	Part Number	Beam Angle (°)	Diameter (mm)	Shape	Rebel	Rebel ES
Fraen*	FGR-N1-RE-0R	5	27	Circular	✓	✓
Khatod	KCLP1270CR	50 x 70	39.8 x 39.8	Square	✓	✓
Optoelectronic*	KCLP1277	35	50	Circular	✓	✓

* Refer to datasheets for specific LUXEON Rebel ES beam angles.

LUXEON S REFLECTORS

Supplier	Beam Type	Optic			Shape	Optic Holder Part Number
		Part Number	Beam Angle (°)	Diameter (mm)		
Fraen*	Narrow	R50-N1-LS1-C	10	50	Circular	—
	Medium	R50-M1-LS1-C	25	50		
	Wide	R50-W1-LS1-C	43	50		
LEDIL*	Narrow Beam Lens	CA12090_VENLA-S-IRIS	16.5	45	Circular	—
	Narrow Beam Lens	C11773_VENLA-S	13	45		
	Medium Beam Lens	C11775_VENLA-M	28	45		
	Wide Beam Lens	C11776_VENLA-W	45	45		
	Symmetrical Beam Lens	C11777_VENLA-WW	56	45		

* Refer to datasheets for specific beam angles.



POWER MODULES



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AC-DC Constant Current LED Driver Modules

AC-DC constant current LED drivers are plugged into mains power and can drive LEDs directly. They ensure reliable and efficient operating conditions of LED strings.

OFFLINE AC-DC (120 VAC OR 277 VAC OR 347+ VAC) - WITH UL MARK

Supplier	Part Number	Power (W)	V _{IN} (VAC)	V _{OUT} (VDC)	I _{OUT} (mA)	Dimming**	Remarks
Inventronics	LLC-028S035RSP	28	90-132	40-80	350	TRIAC/TE	—
	LLC-028S050RSP	28	90-132	28-56	500	TRIAC/TE	—
	LLC-028S070RSP	28	90-132	20-40	700	TRIAC/TE	—
	LLC-028S105RSP	28	90-132	13-26	1050	TRIAC/TE	—
Mean Well	PCD-16-350A	16.8	90-135	24-48	350	TRIAC/TE	—
	PCD-16-700A	16.8	90-135	16-24	700	TRIAC/TE	—
	PCD-16-1050A	16.8	90-135	12-16	1050	TRIAC/TE	—
	PCD-16-1400A	16.8	90-135	8-12	1400	TRIAC/TE	—
	PCD-25-350A	20.3	90-135	40-58	350	TRIAC/TE	—
	PCD-25-700A	25.2	90-135	24-36	700	TRIAC/TE	—
	PCD-25-1050A	25.2	90-135	16-24	1050	TRIAC/TE	—
	PCD-25-1400A	25.2	90-135	12-18	1400	TRIAC/TE	—
Philips Lighting (Class 2*)	LED120A0350C28FO	10	120	2.8-28	350	—	—
	LED120A0350C33F	12	120	2.8-33	350	—	See TE Connectivity connector 1365323-1
	LED120A0012V10F	12	120	2.4-12	1000	—	—
	LED120A0700C24F	17	120	2.8-24	700	—	See TE Connectivity connector 1365323-1
	LED120A0700C24FO	17	120	2.8-24	700	—	—
	LED120A0700C28FO	20	120	2.8-28	700	—	—
	LED120A0700C28DO	20	120	10-28	700	0 - 10V	—
	LED277A0700C28FO	20	277	2.8-28	700	—	—
	LED120A0012V21F	25	120	2.8-12	2100	—	—
	LED120A0024V10D	25	120	14-24	1050	0 - 10V	—
	LED120A0024V10F	25	120	2.8-24	1050	—	—
	LED120A0024V14FO	34	120	2.8-24	1400	—	—
	LED120A1400C24F	34	120	2.8-24	1400	—	—
	LED120A0024V18FO	40	120	2.8-24	1750	—	—
LEDINTA0024V28FO	67	120-277	3.5-24	2800	—	—	

* as defined by UL

** TE = Trailing Edge



OFFLINE AC-DC (120 VAC OR 277 VAC OR 347+ VAC) - WITH UL MARK (continued)

Supplier	Part Number	Power (W)	V _{IN} (VAC)	V _{OUT} (VDC)	I _{OUT} (mA)	Dimming**	Remarks
Philips Lighting (Class 1*)	LEDINTA700C140F3O	50	120-277	60-140	350	—	Output Selectable
	LEDINTA700C140F3O	75	120-277	60-140	530	—	Output Selectable
	LEDINTA700C140F3O	100	120-277	60-140	700	—	Output Selectable
	LEDINTA0400C280FO	115	120-277	120-280	400	—	—
	LEDHCNA0400C280FO	115	347-480	120-280	400	—	—
	LEDINTA0350C425FO	150	120-277	120-425	350	—	—
	LEDINTA0350C425DO	150	120-277	120-425	350	0 - 10V	—
	LEDHCNA0350C425FO	150	347-480	120-425	350	—	—
	LEDHCNA0350C425DN	150	347-480	120-425	350	0 - 10V	—
	LEDINTA0530C280DO	150	120-277	120-280	530	0 - 10V	—
	LEDHCNA0530C280DN	150	347-480	120-280	530	0 - 10V	—
	LEDINTA0700C210FO	150	120-277	60-210	700	—	—
	LEDINTA0700C210DO	150	120-277	60-210	700	0 - 10V	—
	LEDHCNA0700C210FO	150	347-480	60-210	700	—	—
	LEDHCNA0700C210DN	150	347-480	60-210	700	0 - 10V	—
	LEDINTA700C210A54	150	120-277	60-210	700	—	—
	LEDINTA1050C140DO	150	120-277	40-140	1050	0 - 10V	—
Philips (Downlight)	LEDINTA0520C60DB	30	120-277	25-56	350-520	0 - 10V	—
	913701213402	39	120-277	25-56	200-700	0 - 10V	Fortimo driver (North America) with 12 V auxiliary output
	LEDINTA0520C80DB	40	120-277	40-77	350-520	0 - 10V	—
	LEDINTA2000C24DO	48	120-277	16-24	1000-2000	0 - 10V	Slim form factor
	LEDINTA1000C60DB	50	120-277	25-48	700-1050	0 - 10V	—
ROAL Electronics (Tropo)	RLDD015L-350	16.8	90-135	24-48	350	TRIAC/TE	—
	RLDD015L-350H	7.4	90-135	12-21	350	TRIAC/TE	—
	RLDD015L-350J	11.2	90-135	18-32	350	TRIAC/TE	—
	RLDD015L-700	16.8	90-135	16-24	700	TRIAC/TE	—
	RLDD015L-800	9.6	90-135	8-12	800	TRIAC/TE	—
	RLDD015L-1000	16	90-135	10-16	1000	TRIAC/TE	—
	RLDD015L-1500	15	90-135	5-10	1500	TRIAC/TE	—

* as defined by UL

** TE = Trailing Edge

AC-DC Constant Current LED Driver Modules *(continued)*

OFFLINE AC-DC (230 VAC OR 240 VAC) - WITH CE MARK

Supplier	Part Number	Power (W)	V _{IN} (VAC)	V _{OUT} (VDC)	I _{OUT} (mA)	Dimming*	Remarks
Harvard Engineering PLC	CL350-240-56V	20	198-265	24-56	350	—	—
	CL500-240-56V	28	198-265	24-56	500	—	—
	CL700S-240	33	198-265	9-48	350 or 700	—	Switchable
	CL1000S-240	33	198-265	9-48	500 or 1000	—	Switchable
	CL350L-240	10	198-265	6-28.5	350	—	—
	CL350D-240	16.8	198-265	15-48	350	DALI	—
	CL500D-240	24	198-265	15-48	500	DALI	—
	CL700D-240	30.1	198-265	15-43	700	DALI	—
	CL1000D-240	30	220 - 240	15-30	1000	DALI	—
	CL1200D-240	25	220 - 240	15-21	1200	DALI	—
	CL1400D-240	25	220 - 240	15-18	1400	DALI	—
	CL350A-240	16.8	198-265	10.8-48	350	0 - 10V	—
	CL500A-240	24	198-265	10.8-48	500	0 - 10V	—
	CL700A-240	33.6	198-265	10.8-48	700	0 - 10V	—
CLQ2700S-240	2 x 33	100-277	12-48	350 or 700	—	Twin Output / Switchable	
CLQ21000S-240	2 x 33	100-277	12-48	500 or 1000	—	Twin Output / Switchable	
Philips Lighting (Indoor)	929000465003	46	220-240	20-80	200-700	DALI	12 V auxiliary output
	929000465203	46	220-240	20-80	200-700	DALI	12 V auxiliary output
	929000614403	46	220-240	20-80	200-700	—	12 V auxiliary output
	929000600003	22	220-240	15-24	300-700	—	—
	929000600203	36	220-240	25-36	300-700	—	12 V auxiliary output
	929000485803	30	220-240	18-36	300-1000	DALI	—
	929000600403	30	220-240	18-36	300-1000	DALI	12 V auxiliary output
	929000614503	45	220-240	20-80	200-700	—	12 V auxiliary output
	913710053666	10	220-240	9-14	700	TE	—
	929000600303	25	220-240	20-36	300-700	TE	—
	913710053866	30	220-240	18-42	700	TE	—
Philips Lighting (Outdoor)	913700615882	12	207-264	2.4-33	350	—	—
	913700615982	17	207-264	5.6-24.6	700	—	—
	913700625082	40.8	207-264	4.6-24	1750	—	—
	913700704582	67	207-264	2.6-25	2800	—	—
	913700607382	80	207-264	3.2-25	3150	—	—
	913713220562	30	220-240	18-42	700	TE	—
	913710850002	150	220-240	120-425	350	—	—
	913701218202	150	220-240	120-425	350	0 - 10V	—
	913710859002	150	220-240	60-210	700	—	—
	913701211602	150	220-240	60-210	700	0 - 10V	—
	913701215402	150	220-240	115-280	0.35/0.41/0.53	—	—
929000704712	150	220-240	40-140	1,050	0 - 10V	—	
ROAL Electronics (Tropo)	RLDD015H-350	16.8	176-265	24-48	350	TRIAC/TE	—
	RLDD015H-350H	7.4	176-265	12-21	350	TRIAC/TE	—
	RLDD015H-350J	11.2	176-265	18-32	350	TRIAC/TE	—
	RLDD015H-600	7.2	176-265	8-12	600	TRIAC/TE	—
	RLDD015H-700	16.8	176-265	16-24	700	TRIAC/TE	—
RLDD015H-1000	16	176-265	10-16	1000	TRIAC/TE	—	

* TE = Trailing Edge



UNIVERSAL OFFLINE AC-DC (110-240+ VAC) - WITH UL & CE MARK

Supplier	Part Number	Power (W)	V _{IN} (VAC)	V _{OUT} (VDC)	I _{OUT} (mA)	Dimming	Remarks
Harvard Engineering PLC	CL700S-UNI	33	95-277	9-48	350 or 700	—	Switchable
	CL1000S-UNI	33	95-277	9-48/33	500 or 1000	—	Switchable
	CLQ2700S-UNI	2 x 33	100-277	12-48	350 or 700	—	Twin Output / Switchable
Inventronics (Indoor)	LUC-012S035DSP	12	90-305	17-34	350	0 - 10V	—
	LUC-012S050DSP	12	90-305	12-24	500	0 - 10V	—
	LUC-012S070DSP	12	90-305	9-17	700	0 - 10V	—
	LWC-018S035SSP	18	90-264	26-51	350	—	—
	LWC-018S050SSP	18	90-264	18-36	500	—	—
	LWC-018S070SSP	18	90-264	13-26	700	—	—
	LWC-018S105SSP	18	90-264	9-17	1050	—	—
	LWC-024S035SSP	25.2	90-264	36-72	350	—	—
	LWC-024S050SSP	24	90-264	24-48	500	—	—
LWC-024S070SSP	25.2	90-264	18-36	700	—	—	
LWC-024S105SSP	25.2	90-264	12-24	1050	—	—	
Inventronics (Outdoor)	EUC-025S035DS	25	90-305	24-72	350	0 - 10V	—
	EUC-025S070DS	25	90-305	12-36	700	0 - 10V	—
	EUC-025S105DS	25	90-305	8-24	1050	0 - 10V	—
	EUC-040S035DS	40	90-305	38-114	350	0 - 10V	—
	EUC-040S045DS	40	90-305	30-89	450	0 - 10V	—
	EUC-040S070DS	38	90-305	18-54	700	0 - 10V	—
	EUC-040S105DS	38	90-305	12-36	1050	0 - 10V	—
	EUC-040S140DS	36	90-305	10-25	1400	0 - 10V	—
	EUC-050S035DT	50	90-305	47-142	350	0 - 10V	—
	EUC-050S070DT	50	90-305	24-72	700	0 - 10V	—
	EUC-075S035DT	75	90-305	107-214	350	0 - 10V	—
	EUC-075S070DT	75	90-305	54-108	700	0 - 10V	—
	EUC-075S140DT	75	90-305	27-54	1400	0 - 10V	—
	EUC-075S210DT	75	90-305	18-36	2100	0 - 10V	—
	EUC-075S280DT	75	90-305	13-27	2800	0 - 10V	—
	EUC-096S035DT	96	90-305	137-274	350	0 - 10V	—
	EUC-096S070DT	96	90-305	68-137	700	0 - 10V	—
	EUC-096S105DT	96	90-305	46-92	1050	0 - 10V	—
	EUC-120S035DT	120	90-305	206-343	350	0 - 10V	—
	EUC-120S070DT	120	90-305	103-171	700	0 - 10V	—
EUC-120S420DT	120	90-305	17-28	4200	0 - 10V	—	
EUC-150S035DT	150	90-305	214-428	350	0 - 10V	—	
EUC-150S070DT	150	90-305	107-214	700	0 - 10V	—	
EUC-200S070DT	200	90-305	143-285	700	0 - 10V	—	
EUC-200S105DT	200	90-305	95-190	1050	0 - 10V	—	

AC-DC Constant Current LED Driver Modules *(continued)*



UNIVERSAL OFFLINE AC-DC (110-240+ VAC) - WITH UL & CE MARK (CONTINUED)

Supplier	Part Number	Power (W)	V _{IN} (VAC)	V _{OUT} (VDC)	I _{OUT} (mA)	Dimming	Remarks
Mean Well	APC-12-350	12.6	90-264	9-36	350	—	—
	APC-12-700	12.6	90-264	9-18	700	—	—
	APC-16-350	16.8	90-264	12-48	350	—	—
	APC-16-700	16.8	90-264	9-24	700	—	—
	LPC-20-350	16.8	90-264	9-48	350	—	—
	LPC-20-700	21	90-264	9-30	700	—	—
	LPC-35-700	33.6	90-264	9-48	700	—	—
	LPC-35-1400	33.6	90-264	9-24	1400	—	—
	LPC-60-1400	58.8	90-264	9-42	1400	—	—
	LPF-40D-54	41	90-305	32.4-54	760	0 - 10V	—
LPF-40D-48	40	90-305	28.8-48	840	0 - 10V	—	
Philips Lighting	LEDUNIA0350C12F	3.5	120-240	2.4-12	350	—	—
	LEDUNIA0700C12F	8	120-230	2.4-12	700	—	—
	LEDINTA0024V20FLO	48	120-277	2-24	2000	—	—
	LEDINTA0024V20DLO	48	120-277	2-24	2000	0 - 10V	—
	LEDINTA0024V30FLO	72	120-277	2-24	3000	—	—
	LEDINTA0024V30DLO	72	120-277	2-24	3000	0 - 10V	—
	LEDINTA0024V41FO	100	120-277	3.5-24	4160	—	—
	LEDINTA0024V41DLO	100	120-277	3.5-24	4160	0 - 10V	—
	929000702302	75	120-277	80-152	350-700	0 - 10V/DALI	Programmable
	929000702202	150	120-277	125-280	350-700	0 - 10V/DALI	Programmable
929000704903	75	120-277	80-152	350-700	0 - 10V/DALI	Programmable, AmpDim, EMEA & Asia	
929000705103	150	120-277	125-280	350-700	0 - 10V/DALI	Programmable, AmpDim, EMEA & Asia	
ROAL Electronics (Strato)	RSLD035-03	18.4	120-277	7.5-10.5	1750	0 - 10V	—
	RSLD035-05	30.6	120-277	12.5-17.5	1750	0 - 10V	—
	RSLD035-6A	25	120-277	14.5-20.1	1240	0 - 10V	—
	RSLD035-07	34.3	120-277	17.5-24.5	1400	0 - 10V	—
	RSLD035-7A	17.6	120-277	17.5-24.5	720	0 - 10V	—
	RSLD035-09	31.5	120-277	22.5-31.5	1000	0 - 10V	—
	RSLD035-10	24.5	120-277	25-35	700	0 - 10V	—
	RSLD035-11	27	120-277	27.5-38.5	700	0 - 10V	—
	RSLD035-12	29.4	120-277	30-42	700	0 - 10V	—
	RSLD035-13	31.9	120-277	32.5-45.5	700	0 - 10V	—
	RSLD035-14	34.3	120-277	35-49	700	0 - 10V	—
	RSLD035-15	36.8	120-277	37.5-52.5	700	0 - 10V	—
RSLD035-16	39.2	120-277	40-56	700	0 - 10V	—	
ROAL Electronics (OZONE)	RSOZ070-60-Full*	70	120-277	30-56	350-2100	0 - 10V/DALI	5 V auxiliary output
	RSOZ070-120-Full*	70	120-277	60-115	350-1100	0 - 10V/DALI	5 V auxiliary output
	RSOZ070-200-Full*	70	120-277	120-195	350-550	0 - 10V/DALI	5 V auxiliary output
Harvard Engineering PLC	CL700S-UNI	33	95-277	9-48	350 or 700	—	Switchable
	CL1000S-UNI	33	95-277	9-48/33	500 or 1000	—	Switchable
	CLQ2700S-UNI	2 x 33	100-277	12-48	350 or 700	—	Twin Output / Switchable

* Requires RSOZ070-PTOOL Programming Tool



AC-DC Constant Voltage LED Power Supplies

AC-DC constant voltage power supplies are plugged into mains power and can NOT drive LEDs directly. They are the first part of a dual stage solution. The second stage consists of one or several DC-DC constant current LED drivers. This allows for the creation of flexible power solutions.

OFFLINE AC-DC (120 VAC OR 277 VAC OR 347+ VAC) WITH UL MARK

Supplier	Part Number	Power (W)	V _{IN} (VAC)	V _{OUT} (VDC)	I _{OUT} (mA)
Philips Lighting	LED120A0012V10F*	12	120	12	200-1000
	LED120A0700C24F*	17	120	24	100-700
	LED120A0700C24FO*	17	120	24	100-700
	LED120A0024V10F*	25	120	24	100-1050
	LED120A0012V21F*	25	120	12	400-2100
	LED120A1400C24F*	34	120	24	200-1400
	LED120A0024V14FO*	34	120	24	200-1400
	LED120A0024V18FO*	40	120	24	200-1750
	LEDINTA0024V22FO	53	120-277	24	100-2200
	LED120A0012V50F	60	120	12	800-5000
	LEDINTA0012V50FO	60	120-277	12	100-5000
	LEDINTA0024V28FO*	67	120-277	24	100-2800
	LEDINTA0024V32FO	77	120-277	24	100-3200
	LED120A0024V33F	80	120	24	800-3300

* Can be used in constant current mode.

OFFLINE AC-DC (230 VAC OR 240 VAC) - WITH CE MARK

Supplier	Part Number	Power (W)	V _{IN} (VAC)	V _{OUT} (VDC)	I _{OUT} (mA)
Philips Lighting	913700620891	20	100-240	24	850
	913700620991	60	100-240	24	2500
	913700621091	100	100-240	24	4100

AC-DC Constant Voltage LED Power Supplies *(continued)*

UNIVERSAL OFFLINE AC-DC (110-240+ VAC) - WITH UL & CE MARK

Supplier	Part Number	Power (W)	V _{IN} (VAC)	V _{OUT} (VDC)	I _{OUT} (mA)
Inventronics	EUV-025S012PS	25	90-305	12	2080
	EUV-025S024PS	25	90-305	24	1050
	EUV-040S012PS	36	90-305	12	3000
	EUV-040S024PS	36	90-305	24	1500
	EUV-050S024ST	50	90-305	24	2100
	EUV-076S012ST	60	90-305	12	5000
	EUV-076S024ST	76	90-305	24	3170
	EUV-096S048ST	96	90-305	48	2000
	EUV-150S024ST	150	90-305	24	6250
	EUV-150S048ST	150	90-305	48	3130
	EUV-200S024ST	200	90-305	24	8330
	EUV-200S048ST	200	90-305	48	4170
	EUV-250S048ST	250	90-305	48	5200
	EUV-300S048ST	300	90-305	48	6250
Mean Well	APV-12-12	12	90-264	12	1000
	APV-12-24	24	90-264	24	500
	APV-16-12	15	90-264	12	1250
	APV-16-24	16	90-264	24	670
	LPV-20-12	20	90 - 264	12	1670
	LPV-20-24	20.2	90 - 264	24	840
	LPV-35-12	36	90 - 264	12	3000
	LPV-35-24	36	90 - 264	24	1500
	LPV-60-24	60	90 - 264	24	2500
	LPV-60-48	60	90 - 264	48	1250
	CLG-100-12*	60	90-295	12	5000
	CLG-100-24*	96	90-295	24	4000
	CLG-150-12*	132	90-295	12	11000
	CLG-150-24*	151.2	90-295	24	6300
	PLN-100-48*	96	90-295	48	2000
	LPF-40-12*	40	90-305	12	3340
	LPF-40-24*	40	90-305	24	1670
	LPF-40-48*	40	90-305	48	840
	LPF-60-12*	60	90-305	12	5000
	LPF-60-24*	60	90-305	24	2500
	LPF-60-48*	60	90-305	48	1250
	HLG-80H-12*	60	90-305	12	5000
	HLG-80H-24*	81.6	90-305	24	3400
	HLG-80H-48*	81.6	90-305	48	1700
	HLG-100H-24*	96	90-305	24	4000
	HLG-100H-48*	96	90-305	48	2000
	HLG-120H-12*	120	90-305	12	10000
	HLG-120H-24*	120	90-305	24	5000
	HLG-120H-48*	120	90-305	48	2500
	HLG-150H-12*	150	90-305	12	12500
	HLG-150H-24*	151.2	90-305	24	6300
	HLG-150H-48*	153.6	90-305	48	3200
	HLG-185H-24*	187.2	90-305	24	7800
HLG-185H-48*	187.2	90-305	48	3900	
HLG-240H-24*	240	90-305	24	10000	
HLG-240H-48*	240	90-305	48	5000	
Philips Lighting	LEDINTA0024V20FLO*	48	120-277	24	100-2000
	LEDINTA0024V20DLO*	48	120-277	24	100-2000
	LEDINTA0024V30FLO*	72	120-277	24	100-3000
	LEDINTA0024V30DLO*	72	120-277	24	100-3000
	LEDINTA0024V41FO*	100	120-277	24	100-4160
	LEDINTA0024V41DLO*	100	120-277	24	100-4160
ROAL Electronics	RSLP070-12	48	120-277	12	4000

* Can be used in constant current mode.



DC-DC Constant Current LED Driver Modules



DC-DC constant current LED drivers are connected to AC-DC constant voltage power supplies or batteries and can drive LEDs directly. They ensure reliable and efficient operating conditions of LED strings.

Supplier	Type	Part Number	V_{IN} (VDC)	$V_{OUT\ max}$ (VDC)	I_{OUT} (mA)	Dimming	Associated Wire Harness Part #
LEDdynamics	Low Voltage Boost (DC)	MICROPUCK-2009	0.8 - 3.0	4.0	350		—
LEDdynamics	Med Voltage Boost (DC)	4015-D-E-0350	5 - 28	48	350	✓	3021HEP
		3021-D-E-0350	5 - 32	30	350	✓	3021HEP
		3021-D-E-700	5 - 32	30	700	✓	3021HEP
		3021-D-E-1000	5 - 32	30	1000	✓	3021HEP
LEDdynamics	Med Voltage Buck (DC)	3021-D-N-0350	5 - 32	30	350		—
		A009-D-V-1000	10 - 32	80% of V_{in}	1000	✓	—
		A009-D-V-1400	10 - 32	75% of V_{in}	1400	✓	—
		A009-D-V-2100	10 - 32	50% of V_{in}	2100	✓	—
LEDdynamics	Med Voltage Buck-Boost (DC)	A011-D-V-350	10 - 32	48	350	✓	—
		A011-D-V-500	10 - 32	48	500	✓	—
		A011-D-V-700	10 - 32	48	700	✓	—



POWER ICs

Low & Medium Voltage ICs 47

Offline AC-DC ICs 48



MARVELL®



ON Semiconductor®





Low & Medium Voltage ICs



Low voltage ICs provide the necessary power to drive LUXEON LEDs from input voltages of 6V and under. These solutions are ideal for battery operated applications such as flashlights and headlamps.

Medium voltage ICs deliver the power for driving LUXEON LEDs from input voltages of 12V to 80V. These power solutions are commonly integrated into automotive, industrial and general illumination applications.

Supplier	Voltage	Type	Part Number	V _{IN} (VDC)	V _{OUT} max (VDC)	I _{OUT} max (mA)
Diodes	Low	Boost	ZXSC300	0.8-8.0	External	External
			ZXSC310	0.8-8.0	External	External
			ZXSC400	1.8-8.0	External	External
			ZXSC380	0.8-6	18	80
			ZXLD381	0.9-3.3	18.0	320
			ZXLD383	0.9-3.3	18.0	50
			ZXLD1320	4.0-18	18.0	1500
		ZXLD1321	1.2-12	18.0	1000	
		Buck	ZXLD1320	4.0-18	18.0	1500
		Buck-Boost	ZXLD1322	2.5-15	15.0	700
ON Semiconductor	Low	Buck-Boost	NCP5030	2.7-5.5	5.5	1200
Diodes	Medium Voltage	Buck	ZXLD1350	7.0-30	30.0	350
			ZXLD1356	6.0-60	60.0	550
			ZXLD1360	7.0-30	30.0	1000
			ZXLD1362	6.0-60	60.0	1000
			ZXLD1366	6.0-60	60.0	1000
			AP8800	8.0-28	28.0	350
			AP8801	8.0-48	48.0	500
			AP8802	8.0-48	48.0	1000
			AP8802H	8.0-60	60.0	1000
			AL8805	6.0-30	30.0	1000
			AL8806	6.0-36	36.0	1500
AL8807	6.0-36	36.0	1300			
Marvell	Medium Voltage	Buck	88EM8801	up to 40	40.0	500
ON Semiconductor	Medium Voltage	Buck	CAT4101	3.0-25	25.0	1000
			CAT4201	7.0-36	32.0	350
			NSI50350AS/D	1.8-50	50.0	350
			NCL30100	6.3-18	18.0	External
			NCL30105	up to 22	22.0	External
		NCL30160	6.3-40	40.0	1000	
		Buck-Boost	NCP3065	3.0-40	40.0	1500
		NCP3066	3.0-40	40.0	1500	
NCP3163	2.5-40	40.0	3000			
Diodes	Medium Voltage	Buck-Boost	ZXLD1370	6.5-60	60.0	External
			ZXLD1371	5.3-60	60.0	External
			ZXLD1374	6.5-60	60.0	1500
		Linear Controller	AL8400	2.2-18	18.0	External
		DLD101	50	50.0	1000	
ON Semiconductor	Medium Voltage	LDO	NUD4001	8.0-30	28.0	500

Offline AC-DC ICs



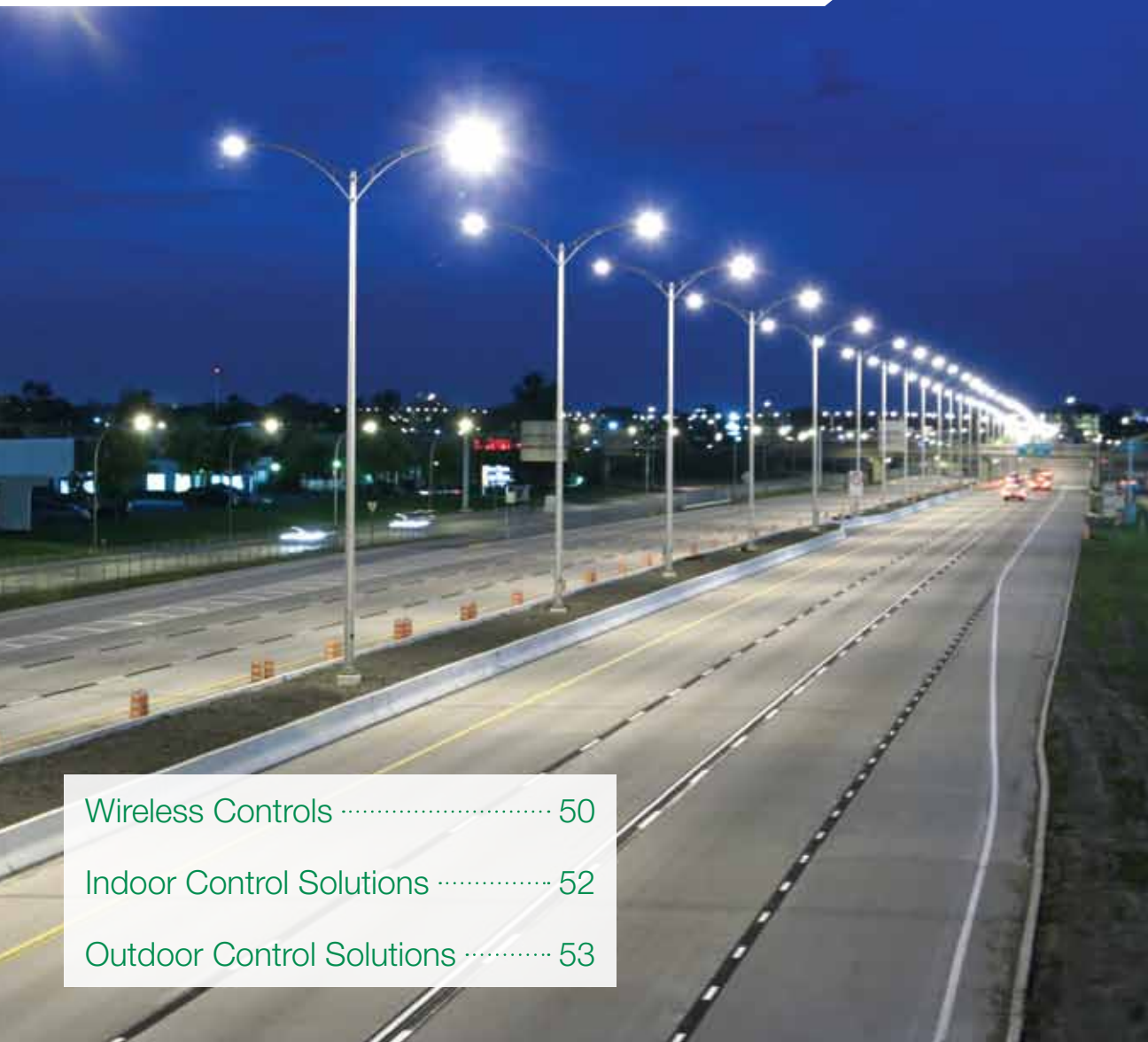
An offline AC-DC IC solution can power LUXEON LEDs from a universal input voltage of 80VAC to 308VAC. These drivers are ideal for general lighting, retrofit bulbs, commercial lighting and other lighting applications.

It is possible to develop several different power solutions from the same AC-DC IC. Depending on the application, the solution may need to be isolated or non-isolated and incorporate power factor correction.

Supplier	Part Number	V _{IN} (VAC)	V _{OUT} max (VDC)	I _{OUT} max (mA)	P _{OUT} max(W)	TRIAC Dimmable	Recommended Topology
Diodes	AL9910/A	85-265	External	External	—	—	Non-Isolated
	FL7730	80-308	30	External	20	✓	Isolated PFC
Fairchild	FL7732	80-308	30	External	20	—	Isolated PFC
	FL7701	80-308	20	External	12	—	Non-Isolated PFC
Marvell	88EM8081	85-277	100	1200	150	—	Isolated
	88EM8082	85-277	200	1500	150	—	Isolated
	88EM8182	85-277	200	1500	100	—	Isolated or Non-Isolated
	88EM8183	85-277	200	1500	100	✓	Isolated or Non-Isolated
ON Semiconductor	NCL30000	85-305	60	1000	50	✓	Isolated PFC
	NCL30001	85-305	60	1000	120	—	Isolated PFC
	NCP1652	85-305	60	2000	120	—	Isolated PFC
	NCP1216	85-265	250	400	—	—	Non-Isolated
	LV5026	85-305	24	1000	30	✓	Isolated or Non-Isolated
	LV5027	85-305	24	1000	30	—	Isolated or Non-Isolated
	LV5028	85-305	24	1000	30	✓	Isolated or Non-Isolated



CONTROLS



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Wireless Controls



SNAP CLOUD APPLIANCE

Supplier	Part Number	Description
	LP400-001	SNAP Cloud Appliance for up to 100 lighting nodes; connection between SNAP Lighting networks and the internet (includes 1st year of SNAP Lighting Cloud Service)
	LP410-001	SNAP Cloud Companion Controller for additional 100 lighting nodes; connection between SNAP Lighting networks and the internet. Requires part# LP400-001
Synapse	LP480-025	Annual fee for SNAP Lighting Cloud Service to remotely control or monitor up to 25 SNAP Lighting nodes
	LP480-100	Annual fee for SNAP Lighting Cloud Service to remotely control or monitor up to 100 SNAP Lighting nodes
	LP480-500	Annual fee for SNAP Lighting Cloud Service to remotely control or monitor up to 500 SNAP Lighting nodes
	LP480-999	Annual fee for SNAP Lighting Cloud Service to remotely control or monitor up to 1000 SNAP Lighting nodes
	LPSET-001	Optional fee to personalize the URL for access to the SNAP Lighting Cloud
	LPCOM-001	SNAP Lighting System commissioning tool

SNAP DIM-10

Supplier	Part Number	Description
Synapse	LP001-001	SNAP DIM-10 100-240 V for dimming and full on/off
	LP002-001	SNAP DIM-10 100-277 V for dimming and full on/off



SNAP ACCESSORIES

Supplier	Part Number	Description
Synapse	LP201-002	SNAP LightSense detects ambient light and motion
	LP301-001	SNAP Switch for wireless lighting control via wall-mount dimmer

SNAP DMX

Supplier	Part Number	Description
Synapse	LP500-001	SNAP DMX, 2 Mbps, 2.4 GHz, North America, 16 universes, 96 channels
	LP510-001	SNAP DMX, 2 Mbps, 2.4 GHz, North America, 16 universes, 512 channels, RDM
	LP511-001	SNAP DMX, 2 Mbps, 2.4 GHz, Outside North America, 16 universes, 512 channels, RDM

LIGHTING STARTER KIT

Supplier	Part Number	Description
Synapse	LPEK1000	Lighting Starter Kit containing (1) LP400-001, (2) LP002-001, (1) LP201-002 and (1) LP301-001

WIRELESS TRANSCIVER MODULES

Supplier	Part Number	V_{IN} (VDC)	Channels	Data Rate	Network
CEL	ZICM2410P0-1	2.1-3.3	16	250 Kbps, 500Kbps, 1 Mbps	Protocol: SNAP, MAC, SMAC, ZigBee - Topology: Mesh, Point-to-Point, Point-to-Multipoint
	ZICM2410P0-1-SN	2.1-3.3	16		
	ZICM2410P0-1C*	2.1-3.3	16		
	ZICM2410P0-1C-SN*	2.1-3.3	16		
	ZICM2410P0-KIT2-1**	2.1-3.3	16		
	ZICM2410P2-1	2.1-3.3	16		
	ZICM2410P2-1-SN	2.1-3.3	16		
	ZICM2410P2-1C*	2.1-3.3	16	250 Kbps	ZigBee Pro, Light Link, Smart Energy, Home Automation - Topology: Mesh, Point-to-Point, Point-to-Multipoint
	ZICM2410P2-1C-SN*	2.1-3.3	16		
	ZICM2410P2-KIT1-1**	2.1-3.3	16		
	ZICM357P2-2	2.7-3.6	16		
	ZICM357P2-1-NF	2.1-3.6	16		
	ZICM357P2-2C*	2.7-3.6	16		
	ZICM357P2-1C-NF*	2.1-3.6	16		
ZICM357P2-KIT1-1**	2.7-3.6	16			
ZICM-EM35X-DEV-KIT-1**	2.7-3.6	16			

Note: All operate in the 2.4GHz frequency band

* Includes U.FL Connector for external antenna

** Evaluation Kit - includes: Eval. Board with Module, Information CD (Network Analyzer & Antenna in KIT2 only)

Indoor Control Solutions

Philips ActiLume is an indoor, luminaire-based lighting control system that allows for energy savings through the use of daylight harvesting and occupancy sensing. The system consists of two components: a controller and a sensor module. Each controller and sensor module can control up to nine drivers.

The systems are easy to put into commission and designed to deliver maximum energy savings without sacrificing visual comfort to the commercial sector. All it takes to set it up is to push a button on the sensor that calibrates the light level and switches the controller between open plan and private office modes. Additional applications include classrooms, hallways, and meeting rooms.



FEATURES

- State of the art daylight / occupancy sensor
- Simple to use lighting control system
- Two programmed application modes

BENEFITS

- Provides a potential energy savings up to 65%* without sacrificing visual comfort
- No specific lighting control training is needed to commission or adjust light levels or operation modes
- Private or open plan modes can be selected via a simple push of the service button

* Energy saving lighting control systems for open plan offices: a field study National Research Council Canada, v4 no1, July 2007 pages 7-29.

Philips ActiLume systems are available in 1 - 10V and DALI versions. Philips ActiLume Color Systems are also available and can be used for color mixing control solutions for office, hospitality and retail applications.

Part#	Description
LLC1654	Philips ActiLume DALI Controller (North America)
LCC1653	Philips ActiLume DALI Controller (EMEA & Asia)
LRI1653	Philips ActiLume DALI Sensor 100 cm cord (Global)
LLC1655	Philips ActiLume 1-10V Switchbox (Global)
LRI1655	Philips ActiLume 1-10V Sensor 100 cm cord (Global)



Outdoor Control Solutions

The Philips Dynadimmer is a compact luminaire-based controller, designed to be attached to 0 - 10 V dimmable LED drivers to dim various types of outdoor lighting luminaires. It offers true flexibility and is applicable to all outdoor applications where light level adjustment is needed such as parking lots, highways, residential streets and public areas. It can be used in new installations, existing installations or selected individual luminaires.



FEATURES

- Five user-programmable dimming levels and time periods
- Compact size
- Easy-to-use software and programming equipment
- Intelligent PC-based software times and levels

BENEFITS

- Allows users to reduce energy consumption when and as they wish
- Easy installation within a luminaire or pole without the need for external controls or signal wiring
- Easy set-up and modification of dimming
- Provides a forecast of energy savings based on parameters set by the user

Philips Dynadimmer is available now, and offers the family of products below:

Part#	Description
LLC7230	Philips Dynadimmer 0 - 10V (North America)
LLC7220	Philips Dynadimmer 1- 10 V SELV (EMEA & Asia)
LCC7210	Philips Dynadimmer USB PC Cable (Global)



THERMAL

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Thermal



ACTIVE COOLING

Series	Product	SynJet Adjustment	Product Compatibility	Part Number	Diameter/Length (mm)	Thermal Resistance (°C)*	Max Cooling Capacity (W)**	Input Voltage (V)	Power Consumption (W)***
ZFlow 50	SynJet Cooler	Level Select	—	SM16S-CM005-012	50	—	—	5	0.44 - 0.89
		PWM	—	SM16S-CM005-010	50	—	—	5	0.44 - 0.89
		Level Select	—	SM16S-CM012-011	50	—	—	12	0.44 - 0.89
		PWM	—	SM16S-CM012-012	50	—	—	12	0.44 - 0.89
	Heat Sink	—	MR16 Style	HM16S-CALBL-001	50	2.00 - 3.25	20	—	—
ZFlow 65	SynJet Cooler	Level Select	—	SPARS-CM005-002	65	—	—	5	0.45 - 0.85
		PWM	—	SPARS-CM005-001	65	—	—	5	0.45 - 0.85
		Level Select	—	SPARS-CM012-002	65	—	—	12	0.45 - 0.85
		PWM	—	SPARS-CM012-001	65	—	—	12	0.45 - 0.85
	Heat Sink	—	PAR20 Style	HP20S-CALBL-001	66	1.67 - 2.50	24	—	—
		—	LUXEON S	HP20S-CALBL-002	66	1.67 - 2.50	24	—	—
		—	PAR25 Style	HP25S-CALBL-001	75	1.25 - 1.67	32	—	—
		—	PAR30 Style	HP30S-CALBL-001	95	1.00 - 1.55	40	—	—
		—	Philips TDLM	HP30S-CALBL-002	95	1.00 - 1.55	40	—	—
		—	Philips SLM	HSSLS-CALCL-005	75	1.41 - 2.33	21	—	—
	Heat Sink	—	Configurable	HSSLS-CALCL-006	75	1.41 - 2.33	21	—	—
		—	Osram PrevaLED	HSSLS-CALCL-009	75	1.41 - 2.33	21	—	—
		—	Bridgelux ES	HSSLS-CALCL-010	75	1.41 - 2.33	21	—	—
		—	Zhaga B3	HSSLS-CALCL-015	75	1.41 - 2.33	21	—	—
		SynJet Cooler	Level Select	—	SSLCS-CM005-002	75	—	—	5
PWM	—		SSLCS-CM005-001	75	—	—	5	0.36 - 0.55	
Level Select	—		SSLCS-CM012-002	75	—	—	12	0.36 - 0.55	
PWM	—		SSLCS-CM012-001	75	—	—	12	0.36 - 0.55	
Heat Sink	—		Philips SLM	HSLCS-CALCL-001	75	0.97 - 1.20	31	—	—
	—		Bridgelux ES	HSLCS-CALCL-003	75	0.97 - 1.20	31	—	—
	—		Osram PrevaLED	HSLCS-CALCL-004	75	0.97 - 1.20	31	—	—
	—		Bridgelux ES	HSLCS-CALCL-005	75	0.97 - 1.20	31	—	—
	—		Configurable	HSLCS-CALCL-007	75	0.97 - 1.20	31	—	—
	—		Zhaga B3	HSLCS-CALCL-015	75	0.97 - 1.20	31	—	—
ZFlow 75	Heat Sink	—	Philips SLM	HSLCS-CALBL-001	87	0.88 - 1.00	34	—	—
		—	Osram PrevaLED	HSLCS-CALBL-002	87	0.88 - 1.00	34	—	—
		—	Xicato XSM	HSLCS-CALBL-006	87	0.88 - 1.00	34	—	—
		—	Bridgelux ES	HSLCS-CALBL-008	87	0.88 - 1.00	34	—	—
		—	Zhaga B3	HSLCS-CALBL-018	87	0.88 - 1.00	34	—	—
	Flush-Mount Heat Sink	—	Philips SLM	HSLCS-CALBL-020	87	0.91 - 1.07	34	—	—
		—	Osram PrevaLED	HSLCS-CALBL-021	87	0.91 - 1.07	34	—	—
		—	Bridgelux ES	HSLCS-CALBL-023	87	0.91 - 1.07	34	—	—
		—	Xicato XSM	HSLCS-CALBL-024	87	0.91 - 1.07	34	—	—
		—	Zhaga B3	HSLCS-CALBL-025	87	0.91 - 1.07	34	—	—
Heat Sink	—	Philips SLM	HSLCS-CALBL-012	100	0.80 - 0.97	38	—	—	
	—	Osram PrevaLED	HSLCS-CALBL-015	100	0.80 - 0.97	38	—	—	
	—	Zhaga B3	HSLCS-CALBL-019	100	0.80 - 0.97	38	—	—	
	—	Zhaga B3	HSLCS-CALBL-019	100	0.80 - 0.97	38	—	—	

* Thermal resistance when used in conjunction with SynJet. Value is dependent on SynJet performance setting.

** Maximum cooling capacity is based on SynJet running at High-Performance setting.

*** Power consumption dependent on SynJet performance setting.

Thermal *(continued)*

ACTIVE COOLING *(continued)*

Series	Product	SynJet Adjustment	Product Compatibility	Part Number	Diameter/Length (mm)	Thermal Resistance (°C)*	Max Cooling Capacity (W)**	Input Voltage (V)	Power Consumption (W)***	
ZFlow 90	SynJet Cooler	Level Select	—	NX200100	90	—	—	5	0.48 - 0.98	
		PWM	—	NX200101	90	—	—	5	0.48 - 0.98	
		Level Select	—	NX200102	90	—	—	12	0.48 - 0.98	
		PWM	—	NX200103	90	—	—	12	0.48 - 0.98	
	Heat Sink	—	Configurable	—	NX300100	118	0.55 - 0.75	60	—	—
		—	Philips SLM	—	NX300101	118	0.55 - 0.75	60	—	—
		—	Osram PrevaLED	—	NX300102	118	0.55 - 0.75	60	—	—
		—	Bridgelux RS	—	NX300103	118	0.55 - 0.75	60	—	—
		—	Philips SLM	—	NX300104	118	0.50 - 0.70	60	—	—
		—	Zhaga B3	—	NX300105	118	0.55 - 0.75	60	—	—
		—	GE Infusion/ Zhaga B5	—	NX300106	100	0.70 - 1.00	70	—	—
		—	GE Infusion/ Zhaga B5	—	NX300118	100	0.70 - 1.00	70	—	—
—		Philips TDLM, Zhaga B2	—	NX300119	134	0.44 - 0.78	70	—	—	
ZFlow 100	SynJet Cooler	Level Select	—	SSSLs-CM005-008	100	—	—	5	0.55 - 0.70	
		PWM	—	SSSLs-CM005-009	100	—	—	5	0.55 - 0.70	
		Level Select	—	SSSLs-CM012-017	100	—	—	12	0.55 - 0.70	
		PWM	—	SSSLs-CM012-018	100	—	—	12	0.55 - 0.70	
	Heat Sink	—	Philips DLM	—	HSSLS-CALBL-005	120	0.75 - 1.06	40	—	—
		—	Philips DLM	—	HSSLS-CALBL-003	140	0.63 - 0.94	48	—	—
Heat Sink	—	Bridgelux RS	—	HSSLS-CALBL-013	140	0.63 - 0.94	48	—	—	
	—	Philips DLM	—	HSSLS-CALCL-008	140	0.63 - 0.94	48	—	—	
	—	Philips TDLM/ Zhaga B2	—	HSSLS-CALCL-012	140	0.63 - 0.94	48	—	—	
	—	Osram PrevaLED	—	HSSLS-CALCL-013	140	0.63 - 0.94	48	—	—	
XFlow 30	SynJet Cooler	High-Performance PWM	—	SSCCS-IM012-001	—	—	—	12	0.55	
		Standard PWM	—	SSCCS-IM012-002	—	—	—	12	0.55	
	Heat Sink	—	Philips LLM	—	NX301100	230	1.00	30	—	—
		—	Chip Cooler	—	HSCCS-CALBL-001	50	1.10	40	—	—

* Thermal resistance when used in conjunction with SynJet. Value is dependent on SynJet performance setting.

** Maximum cooling capacity is based on SynJet running at High-Performance setting.

*** Power consumption dependent on SynJet performance setting.



CABLE HARNESSSES (Required for all SynJet coolers)

Part Number	Length (mm)
WALLS-C4150-001	150
WALLS-C4370-001	370
WALLS-C4600-001	600

PASSIVE COOLING

Application	Part Number	Diameter (mm)	Height (mm)	Thermal Resistance (°C)	Max Cooling Capacity (W)
Flush-Mount Heat Sink	HP20S-CALBL-001	66	29	4.5	9
	HP25S-CALBL-001	75	35	3.5	11
	HP30S-CALBL-001	95	39	2.5	16
	HSLCS-CALBL-025	87	57	3.00	10
Spotlight Style Heat Sink	HSSLS-CALCL-006	75	57	4.50	7
	HSLCS-CALCL-007	75	57	3.50	9
	HSLCS-CALBL-001	87	57	3.00	10
	HSLCS-CALBL-012	100	57	2.00	15
Downlight Style Heat Sink	NX300100	118	42	1.55	19
	NX300106	100	42	2.50	12
	NX300123	134	42	1.00	30
	HSSLS-CALBL-005	120	57	2.00	15
	HSSLS-CALBL-003	140	47	1.75	17



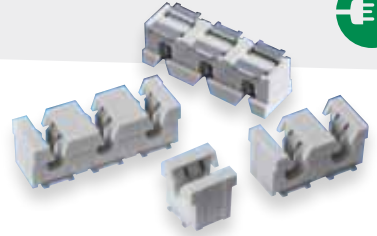
CONNECTORS



Wire to Board	59
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Connectors



WIRE TO BOARD

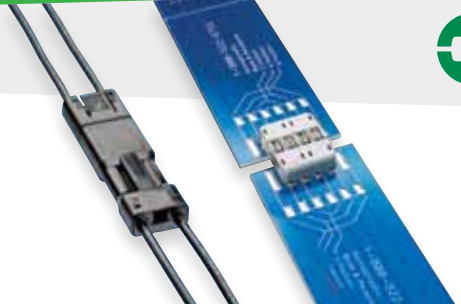
Supplier	Product Family	Part Number	Description
AVX	Series 9176; Single Contact w/Optional Cap	709176001432006	1 Position Contact, 24 AWG
		709176001422006	1 Position Contact, 22 AWG
		609176001415100	Cap, All AWG
		709176001532006	1 Position Contact, 24 AWG
		709176001522006	1 Position Contact, 22 AWG
		709176001511006	1 Position Contact, 20 AWG
		709176001501006	1 Position Contact, 18 AWG
		609176001516100	Cap, 22-24 AWG
		609176001521100	Cap, 18-20 AWG
		009176001022106	1 Position Connector, 22 AWG
	Series 9176; Standard IDC*	009176002022106	2 Position Connector, 22 AWG
		009176003022106	3 Position Connector, 22 AWG
		009276001021106	1 Position Connector, 18-24 AWG
	Series 9276; Wire to Board	009276002021106	2 Position Connector, 19-24 AWG
		009276003021106	3 Position Connector, 18-24 AWG
		069276700101000	Wire Removal Tool

* 18, 20 and 24 AWG available in this series, confirm part number and availability

Connectors *(continued)*

WIRE TO BOARD *(continued)*

Supplier	Product Family	Part Number	Description	
LED Poke-In Connectors		1954097-1	SMT Poke-In 2 Position, Natural	
		2008563-1	SMT Poke-In 1 Position, Natural	
Light N Lock Ballast Disconnect		2134611-1	SMT Micro Poke-in, 1 Position, Natural	
		2008144-1	2 Position MATED PAIR, Natural	
		2106135-2	2 Position Plug Assembly	
		2106135-3	3 Position Plug Assembly	
		2106135-4	4 Position Plug Assembly	
		2106136-2	2 Position Receptacle Assembly	
		2106136-3	3 Position Receptacle Assembly	
		2106136-4	4 Position Receptacle Assembly	
	Slimseal SSL Lighting Connector		2106053-2	2 Position Vertical SMT Header
			2106053-4	3 Position Vertical SMT Header
			2106053-6	4 Position Vertical SMT Header
			2106056-5	3 Position Right Angle SMT Header
			2106056-8	4 Position Right Angle SMT Header
			2106123-1	18-20 AWG Receptacle Terminal
			2106123-2	18-20 AWG Receptacle Terminal (Loose Piece)
		2106124-2	18-20 AWG Blade Terminal	
		2106124-9	18-20 AWG Blade Terminal (Loose Piece)	
Hermaphroditic Wire To Board Plug HSG			2058299-1	Connector, Plug Housing, 2 Position White
		2058299-2	Connector, Plug Housing, 4 Position White	
TE Connectivity	Wire To Board Contacts	2058301-1	Terminal, Blade	
		2058301-2	Terminal, Blade, Loose Piece	
		2058302-2	Terminal, Socket, Loose Piece	
Wire To Board Plug Assemblies		2058300-1	Assembly, Plug, 2 Position with 4 Inch Wire Leads - White	
		2058300-2	Assembly, Plug, 4 Position with 4 Inch Wire Leads - White	
Inverted Thru Board Connectors		2106091-1	Connector, SMT 2 Position, White	
		2106091-2	Connector, SMT 3 Position, White	
		2106091-4	Connector, SMT 5 Position, White	
Inverted Thru Board MINI CT Plug Assembly		2058943-1	Assembly, Plug, 2 Position with 6 Inch Leads	
		2058943-3	Assembly, Plug, 4 Position with 6 Inch Leads	
		2058943-4	Assembly, Plug, 5 Position with 6 Inch Leads	
		2058943-5	Assembly, Plug, 6 Position with 6 Inch Leads	
IDC SSL Connectors		2106003-2	2 Position, IDC SMT Assembly, 18 AWG	
		2106003-3	3 Position, IDC SMT Assembly, 18 AWG	
		1-2106003-2	2 Position, IDC SMT Assembly, 20 AWG	
		1-2106003-3	3 Position, IDC SMT Assembly, 20 AWG	
		2106431-2	2 Position, IDC SMT Assembly, 18 AWG	
		2106431-3	3 Position, IDC SMT Assembly, 18 AWG	
		1-2106431-2	2 Position, IDC SMT Assembly, 20 AWG	
		2-2106431-2	2 Position, IDC SMT Assembly, 22 AWG	
		3-2106431-2	2 Position, IDC SMT Assembly, 24 AWG	
		2106489-2	2 Position, IDC Thru Hole Assembly, 18 AWG	
		1-2106489-2	2 Position, IDC Thru Hole Assembly, 20 AWG	
		2106751-2	2 Position, IDC Thru Hole Assembly, 18 AWG	



WIRE TO WIRE

Supplier	Product Family	Part Number	Description
AVX	Series 9286; Thru Wire*	009286002021106	2 Position Connector, 18-26 AWG
		009286003021106	3 Position Connector, 18-26 AWG
	Series 9286; Junction Box**	009286004121506	1 Position Connector, 18-26 AWG
TE Connectivity	Light N Lock	2008144-1	2 Position MATED PAIR, Natural
		2106135-2	2 Position Plug Assembly
		2106135-3	3 Position Plug Assembly
		2106135-4	4 Position Plug Assembly
	Slimseal SSL Lighting Connector	2106136-2	2 Position Receptacle Assembly
		2106136-3	3 Position Receptacle Assembly
		2106136-4	4 Position Receptacle Assembly
		2106123-1	18-20 AWG Receptacle Terminal
		2106123-2	18-20 AWG Receptacle Terminal (Loose Piece)
		2106124-2	18-20 AWG Blade Terminal
	CoolSplice Connector	2106124-9	18-20 AWG Blade Terminal (Loose Piece)
		293545-1	Unsealed connector (green buttons), accepts 18 AWG wire
		293545-2	Sealed connector (blue buttons), accepts 18 AWG wire
293545-3		Unsealed connector (green buttons), accepts 20-22 AWG wire	
		293545-4	Sealed connector (blue buttons), accepts 20-22 AWG wire

* 1, 4, 6 and 8 positions available in this series, confirm part number and availability

** 6 and 8 positions available in this series, confirm part number and availability

BOARD TO BOARD

Supplier	Product Family	Part Number	Description
AVX	Series 9159; PCB Plug Connectors	109159002101116	Horizontal Plug, 2 Position
		139159002101116	Vertical Plug, 2 Position
		109159003101116	Horizontal Plug, 3 Position
		139159003101116	Vertical Plug, 3 Position
	Series 9159; PCB Socket Connectors	209159002101116	Horizontal Socket, 2 Position
		209159003101116	Horizontal Socket, 3 Position
	Series 9159; Plug Cable Connectors	119159002101116	Plug Body, 2 Position
		609159330201000	Cover, 2 Position
		609159340201000	Latch, 2 Position
Series 9159; Shorting Socket	589159002000006	Shorting Socket, 2 Position	
TE Connectivity	Hermaphroditic Board To Board	1954289-1	Connector, Blade & Receptacle, 2 Position White
		1954289-2	Connector, Blade & Receptacle, 4 Position White
	Miniature Hermaphroditic Board To Board	1971567-1	Miniature Hermaphroditic Board To Board Connector 2P
	CT Connectors	1365323-1	Connector Cable
		2058703-1	Connector, Blade & Receptacle, 2 Position White
	Board To Board SMT Connectors	2058703-2	Connector, Blade & Receptacle, 4 Position White
		1971567-1	Connector, mini blade & receptacle, 2 Position White
1971567-2		Connector, mini blade & receptacle, 4 Position White	

LED LIGHT ENGINES



**simpleLED® SOLUTIONS
& THE PHILIPS LED
LICENSING PROGRAM**

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**LIGHT ENGINE
BOARDS**

PAGES 66-72



OPTICS

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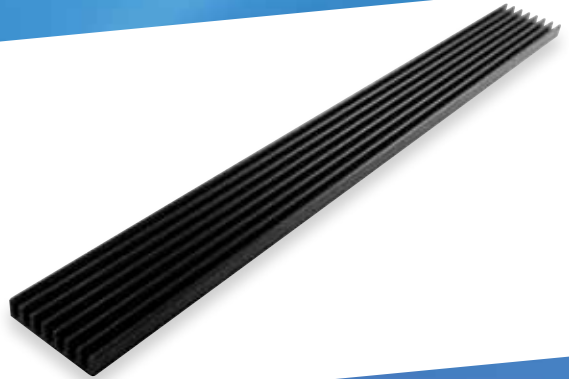
POWER SOLUTIONS

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THERMAL

PAGE 76



CONNECTORS

PAGE 77



simpleLED® Solutions

simpleLED® solutions help accelerate your time to market, by providing you a broad portfolio of light engines which consist of LEDs on a board, with the option of secondary optics and an onboard connector. We'll provide the tools and product solutions to help you avoid obstacles and focus on getting your product to market quickly and seamlessly, while adopting energy efficient, environmentally friendly, long lifetime LED lighting technology.

FEATURES

- 3 year warranty
- UL recognized and CE approved
- Ready to sell product
- 4-6 week lead time for over 1000 configurations

BENEFITS

- Accelerates your speed to market
- Reduces your developmental costs
- Rapid prototyping delivery
- Can qualify for 0% royalty license with Philips Clover trademark

simpleLED incorporates the latest in LUXEON Rebel LED technology. Available in a number of CCT/CRI combinations and various flux ranges, it facilitates meeting the exact requirements for your application.



CIRCULAR CONFIGURATION

Applications: Task Lights, Downlights, Accent, Spot Lights

Configurations: 3, 6, 7, 9, 12, 18 or 24 LEDs

Output @ 350mA: 200-1000lm

Available Diameters: 34, 45, 50, 63, 75, 76, 95 or 120mm



LINEAR CONFIGURATION

Applications: Wall-Wash, Cove, Wall Packs, Retail Display, Under Cabinet

Configurations: 1, 3, 4 or 6 LEDs

Output @ 350mA: 80-700lm

Available Lengths: 50, 74, 75, 142, 150, 284 or 300mm lengths



SQUARE CONFIGURATION

Applications: Accent Lights, Downlights, Task Lights, Spot Lights

Configurations: 4 or 9 LEDs

Output @ 350mA: 300-1000lm

Available Dimensions: 50x50mm or 75x75mm



Starter kits available for circular and linear configurations.
Visit www.FutureLightingSolutions.com/simpleLED for more information.

simpleLED®



The Philips LED Licensing Program

Future Lighting Solutions offers a basic light engine marked with the Clover trademark as a qualified component under the Philips LED Licensing Program.

1. HOW IT WORKS

Philips introduced a patent licensing program for branded LED-based luminaires used in the general illumination, architectural, entertainment and theatrical markets. If you are a manufacturer of luminaires for one of these end markets and use one of the following technologies, then you may need to enter into a license agreement with Philips.

The technologies covered by the Philips LED Licensing Program include:

- I. Single Color Luminaires
- II. Tunable White Luminaires
- III. Color Changing Luminaires

The royalties due under Philips' LED Licensing Program vary based on the technology used and are calculated as a percentage of the value of a finished branded luminaire covered by a patent in the licensing program, and that is made or sold in a country where such patent is granted (see Figure 1 for the rate breakdown by technology).

Figure 1. Royalty Breakdown:

% Royalty	Technologies
3%	Single Color Luminaires (fixed color temperature white or color)
4%	Tunable White Luminaires (color temperature controllable)
5%	Color Changing Luminaires



The Clover trademark is a registered trademark of Royal Philips Electronics N.V.

2. PHILIPS' LED LICENSING PROGRAM

It is possible to qualify for a 0% royalty payment license if you meet the following conditions:

- I. Luminaire maker must be a licensee of Philips' LED Licensing Program
- II. Luminaires include only "qualified components."

These "qualified components" are defined as:

- LED light engines and
- LED drivers; and
- Components, if any, for controlling the light output of the LEDs used in the luminaires

- III. "Qualified components" all bear a trademark of a "qualified supplier"

3. HOW TO OBTAIN A PHILIPS LED LICENSE AGREEMENT

For details about the Philips LED Licensing Program requirements, please contact Philips Intellectual Property & Standards (IP&S) via www.ip.philips.com/licensing/led or info.LEDlicensing@philips.com. For more information about Clover, please refer to www.ip.philips.com/licensing/clover.

After a general introduction to the program, Philips IP&S and the luminaire maker will:

- Enter into a NDA (This protects the product information and ensures that the luminaire maker's information is not shared outside Philips IP&S)
- Work with luminaire makers to assess their products
- Conclude / issue patent license agreement

Circular LED Light Engines



RENA SOLUTIONS

Series	# LEDs	CCT	Flux (lm) @350mA ¹	Flux (lm) @700mA ¹	Connection Option	Optics	Part Number	LED Series
05711R 45mm Diameter	3	5500K	320-350	560-620	CT-Connector	—	05711R999960200CXXX	LXML-PWC2
		4100K	300-330	540-590	CT-Connector	—	05711R777760200CXXX	LXML-PWN2
		3000K	250-280	450-500	CT-Connector	—	05711R888880150CXXX	LXM8-PW30
		3000K	240-260	420-450	CT-Connector	Tri-Lens Wide Frosted 35°	05711R888880075CBEH	LXM8-PW30
		3000K	225-235	375-420	CT-Connector	Tri-Lens Wide Frosted 35°	05711R888880066CBEH	LXM3-PW71
05712R 45mm Diameter	6	5500K	620-685	1115-1230	CT-Connector	—	05712R999960200CXXX	LXML-PWC2
		4100K	600-670	1070-1185	CT-Connector	—	05712R777760200CXXX	LXML-PWN2
		3500K	460-490	740-840	CT-Connector	—	05712R888880067CXXX	LXM3-PW61
		3000K	800-860	1350-1480	CT-Connector	—	05712R888880150CXXX	LXM8-PW30
05713R 75mm Diameter	9	5500K	940-1030	1680-1850	CT-Connector	—	05713R999960200CXXX	LXML-PWC2
		4100K	900-990	1610-1780	CT-Connector	—	05713R777760200CXXX	LXML-PWN2
		3500K	800-880	1290-1500	CT-Connector	—	05713R888880160CXXX	LXW8-PW35
		3000K	755-845	1345-1515	CT-Connector	—	05713R888880150CXXX	LXH8-PW30

GENERAL LUMINAIRE SOLUTIONS

Series	# LEDs	CCT	Flux (lm) @350mA ¹	Flux (lm) @700mA ¹	Connection Option	Optics	Part Number	LED Series
34mm Diameter	3	5500K	320-350	560-620	Poke-In	—	GLV92C34341/CN-LG03W00T	LXML-PWC2
		4000K	300-330	540-590	Poke-In	—	GLV92C34341/CN-LG03D40T	LXML-PWN2
		3000K	250-280	450-500	Poke-In	—	GLV92C34341/CN-LA03S30Q	LXH8-PW30
50mm Diameter	7	5500K	730-810	1300-1440	Poke-In	—	GLV92C50501/CN-LG07W00T	LXML-PWC2
		4000K	700-780	1250-1380	Poke-In	—	GLV92C50501/CN-LG07D40T	LXML-PWN2
		3000K	585-660	1045-1170	Poke-In	—	GLV92C50501/CN-LA07S30Q	LXH8-PW30
63mm Diameter	9	5500K	940-1030	1680-1850	Poke-In	—	GLV92C63631/CN-LG09W00T	LXML-PWC2
		4000K	900-990	1610-1780	Poke-In	—	GLV92C63631/CN-LG09D40T	LXML-PWN2
		3000K	755-850	1340-1510	Poke-In	—	GLV92C63631/CN-LA09S30Q	LXH8-PW30
76mm Diameter	12	5500K	1250-1380	2500-2770	Poke-In	—	GLV92C76761/CN-LG12W00T	LXML-PWC2
		4000K	1200-1330	2240-2470	Poke-In	—	GLV92C76761/CN-LG12D40T	LXML-PWN2
		3000K	970-1030	1680-1790	Poke-In	—	GLV92C76761/CN-LB12S30L	LXM8-PW30
95mm Diameter	18	5500K	1880-2070	3350-3700	Poke-In	—	GLV92C95951/CN-LG18W00T	LXML-PWC2
		4000K	1800-2000	3210-3550	Poke-In	—	GLV92C95951/CN-LG18D40T	LXML-PWN2
		3000K	1460-1550	2530-2680	Poke-In	—	GLV92C95951/CN-LB18S30L	LXM8-PW30
120mm Diameter	24	5500K	2480-2740	4460-4930	Poke-In	—	GLV92CC0C01/CN-LG24W00T	LXML-PWC2
		4000K	2370-2630	4270-4730	Poke-In	—	GLV92CC0C01/CN-LG24D40T	LXML-PWN2
		3000K	1940-2060	3360-3570	Poke-In	—	GLV92CC0C01/CN-LB24S30L	LXM8-PW30

¹ Light Output calculated based on T_J=85°C through Future Lighting Solutions Usable Light Tool. Does not include optical losses.

For more information on simpleLED go to: www.FutureLightingSolutions.com/simpleLED

Note: Customizable options available. Refer to part number builder on pages 67 & 68 for more details.



Linear LED Light Engines



RENA SOLUTIONS

Series	# LEDs	CCT	Flux @350mA ¹	Flux @700mA ¹	Connector	Optics	Part Number	LED Series
05700R 50x25mm	1	4000K	75-90	135-150	CT-Connector	—	05700R777780075CXXX	LXML-PWN2
		5500K	320-350	560-620	CT-Connector	—	05704R999960200CXXX	LXML-PWC2
		4000K	250-285	460-520	CT-Connector	—	05704R777780170CXXX	LXW8-PW40
05704R 75x30mm	3	3000K	250-280	450-500	CT-Connector	—	05704R888880150CXXX	LXH8-PW30
		3000K	225-235	375-420	CT-Connector	20mm Medium Frosted 19°	05704R888880066CBBF	LXM3-PW71
		2700K	200-230	350-400	CT-Connector	—	05704R888880070CXXX	LXM8-PW27
		4000K	300-330	540-590	CT-Connector	—	05701R777760200CXXX	LXML-PWN2
05701R 150x25mm	3	3500K	245-280	435-505	CT-Connector	—	05701R888880160CXXX	LXW8-PW35
		3000K	250-280	450-500	CT-Connector	—	05701R888880150CXXX	LXH8-PW30
		5500K	620-685	1115-1230	CT-Connector	—	05705R999960200CXXX	LXML-PWC2
05705R 150x30mm	6	4100K	600-670	1070-1185	CT-Connector	—	05705R777760200CXXX	LXML-PWN2
		3500K	480-560	855-995	CT-Connector	—	05705R888880160CXXX	LXW8-PW35
		3000K	800-860	1350-1480	CT-Connector	—	05705R888880150CXXX	LXH8-PW30
		5500K	620-685	1115-1230	CT-Connector	—	05702R999960200CXXX	LXML-PWC2
05702R 300x25mm	6	4100K	600-670	1070-1185	CT-Connector	—	05702R777760200CXXX	LXML-PWN2
		4000K	510-570	915-1030	CT-Connector	—	05702R777780170CXXX	LXW8-PW40
		3000K	460-515	790-895	CT-Connector	—	05702R888880075CXXX	LXM8-PW30
		3000K	400-460	690-790	CT-Connector	—	05702R888880066CXXX	LXM3-PW71

GENERAL LUMINAIRE SOLUTIONS

Series	# LEDs	CCT	Flux @350mA ¹	Flux @700mA ¹	Connector	Optics	Part Number	LED Series
74 x 15mm	3	5500K	320-350	560-620	Poke-In	—	GLV91R74151/CN-LG03W00T	LXML-PWC2
		4000K	300-330	540-590	Poke-In	—	GLV91R74151/CN-LG03D40T	LXML-PWN2
		3000K	240-260	420-450	Poke-In	—	GLV91R74151/CN-LB03S30L	LXM8-PW30
142 x 15mm	4	5500K	420-460	740-820	Poke-In	—	GLV91RE2151/CN-LG04W00T	LXML-PWC2
		4000K	400-440	710-790	Poke-In	—	GLV91RE2151/CN-LG04D40T	LXML-PWN2
		3000K	320-350	560-600	Poke-In	—	GLV91RE2151/CN-LB04S30L	LXM8-PW30
284 x 15mm	4	5500K	420-460	740-820	Poke-In	—	GLV91RS4151/CN-LG04W00T	LXML-PWC2
		4000K	400-440	710-790	Poke-In	—	GLV91RS4151/CN-LG04D40T	LXML-PWN2
		3000K	335-375	600-665	Poke-In	—	GLV92RS4151/CN-LA04S30Q	LXM8-PW30

¹ Light Output calculated based on Tj=85°C through Future Lighting Solutions Usable Light Tool. Does not include optical losses.

For more information on simpleLED go to: www.FutureLightingSolutions.com/simpleLED

Note: Customizable options available. Refer to part number builder on pages 67 & 68 for more details.

Linear LED Light Engines *(continued)*



PHILIPS FORTIMO LED STRIP AND LED LINE

Description	Initial Lumens	CRI	CCT (K)	Module Input Power (W)	Module Efficacy (Lm/W)	Input Voltage (V)	Module B50 L70 (Hours)	T ambient (°C)	Part Number
Fortimo LED Strip 11inch 630lm 830	610	>80	3000	7.0	86	120-277	Tcase max 55°C = 50K	0 - 35	929000668503
Fortimo LED Strip 11inch 630lm 835	620	>80	3500	7.0	88	120-277	Tcase max 55°C = 50K	0 - 35	929000668603
Fortimo LED Strip 11inch 630lm 840	640	>80	4000	6.8	94	120-277	Tcase max 55°C = 50K	0 - 35	929000637503
Fortimo LED Strip 11inch 630lm 865	620	>80	6500	7.1	94	120-277	Tcase max 55°C = 50K	0 - 35	929000668703
Fortimo LED Line LV 3R 1ft 650lm 830	610	>80	3000	5.0	121	120-277	Tcase max 56°C = 50K	0 - 35	929000680903
Fortimo LED Line LV 3R 1ft 650lm 835	640	>80	3500	5.0	127	120-277	Tcase max 56°C = 50K	0 - 35	929000681003
Fortimo LED Line LV 3R 1ft 650lm 840	650	>80	4000	5.0	130	120-277	Tcase max 56°C = 50K	0 - 35	929000681103
Fortimo LED Line LV 3R 1ft 650lm 850	670	>80	5000	5.0	133	120-277	Tcase max 56°C = 50K	0 - 35	929000681203
Fortimo LED Line LV 1R 1ft 1100lm 830	1080	>80	3000	9.1	119	120-277	Tcase max 61°C = 50K	0 - 35	929000691503
Fortimo LED Line LV 1R 1ft 1100lm 835	1100	>80	3500	9.1	121	120-277	Tcase max 61°C = 50K	0 - 35	929000691603
Fortimo LED Line LV 1R 1ft 1100lm 840	1120	>80	4000	9.1	124	120-277	Tcase max 61°C = 50K	0 - 35	929000691703
Fortimo LED Line LV 1R 1ft 1100lm 850	1140	>80	5000	9.1	126	120-277	Tcase max 61°C = 50K	0 - 35	929000691803

Square LED Light Engines



RENA SOLUTIONS

Series	# LEDs	CCT	Flux @350mA ¹	Flux @700mA ¹	Connector	Optics	Part Number	LED Series
05707R 50x50mm	4	4100K	400-440	710-790	CT-Connector	—	05707R777760200CXXX	LXML-PWN2
		3000K	320-350	560-600	CT-Connector	—	05707R888880075CXXX	LXM8-PW30
		4100K	900-990	1610-1780	CT-Connector	—	05708R777760200CXXX	LXML-PWN2
05708R 50x50mm	9	3500K	685-710	1035-1190	CT-Connector	10mm Medium Frosted 22°	05708R888880067CAXF	LXM3-PW61
		3000K	730-770	1260-1340	CT-Connector	—	05708R888880075CXXX	LXM8-PW30
05703R 75x75mm	4	4000K	305-345	525-590	CT-Connector	20mm Wide Frosted 35°	05703R777780075CBBF	LXM3-PW51
		5500K	940-1030	1680-1850	CT-Connector	—	05706R999960200CXXX	LXML-PWC2
05706R 75x75mm	9	4100K	900-990	1610-1780	CT-Connector	—	05706R777760200CXXX	LXML-PWN2
		3500K	800-880	1290-1500	CT-Connector	—	05706R888880160CXXX	LXW8-PW35
		3000K	755-845	1345-1515	CT-Connector	—	05706R888880150CXXX	LXH8-PW30

¹ Light Output calculated based on T_J=85°C through Future Lighting Solutions Usable Light Tool. Does not include optical losses.

For more information on simpleLED go to: www.FutureLightingSolutions.com/simpleLED



Star Boards

OPULENT

LED Series	LUXEON LED on MCPCB Part Number	LED Part Number	Nominal CCT (K)	Min CRI	Min Flux (lm)	Typical Flux (lm)	Forward Current (mA)
LUXEON A	REBEL-STAR-A-PW27	LXH8-PW27	2700	80	140	160	700
	REBEL-STAR-A-PW30	LXH8-PW30	3000	80	150	165	700
	REBEL-STAR-ES-9PW27	LXW9-PW27	2700	90	120	135	700
	REBEL-STAR-ES-9PW30	LXW9-PW30	3000	90	120	145	700
LUXEON Rebel ES	REBEL-STAR-ES-8PW35	LXW8-PW35	3500	80	160	185	700
	REBEL-STAR-ES-8PW40	LXW8-PW40	4000	80	180	200	700
	REBEL-STAR-ES-8PW50	LXW8-PW50	5000	80	180	200	700
	REBEL-STAR-ES-NW200	LXML-PWN2	4000	60	200	230	700
	REBEL-STAR-ES-CW200	LXML-PWC2	5000	60	200	235	700
	REBEL-STAR-8PW27	LXM8-PW27	2700	80	70	80	350
	REBEL-STAR-8PW30	LXM8-PW30	3000	80	75	85	350
LUXEON Rebel Illumination Portfolio	REBEL-STAR-3PW81	LXM3-PW81	2700	80	65	73	350
	REBEL-STAR-LPW71	LXML-PW71	3000	85	50	66	350
	REBEL-STAR-3PW71	LXM3-PW71	3000	80	66	77	350
	REBEL-STAR-3PW61	LXM3-PW61	3500	80	67	80	350
	REBEL-STAR-3PW51	LXM3-PW51	4000	80	90	105	350
	REBEL-STAR-7PW40	LXM7-PW40	4000	70	90	100	350
	REBEL-STAR-NW100	LXML-PWN1-0100	3500-4500	-	100	105	350
LUXEON Rebel General Purpose	REBEL-STAR-CW100	LXML-PWC1-0100	4500-10000	-	100	105	350
	LUXEON C	C-STAR-CW	LXCL-EYW5	5000-6500	75	80	95
LUXEON M	REBEL-STAR-M-SW40	LXR7-SW40	4000	70	840	905	700
	REBEL-STAR-M-SW57	LXR7-SW57	5700	70	840	905	700

LED Series	LUXEON LED on MCPCB Part Number	LED Part Number	Wavelength Range (nm)	Min Flux (lm/mW)	Typical Flux (lm/mW)	Forward Current (mA)	Typical Efficacy (lm/W)
LUXEON Rebel & Rebel ES Color Portfolio	REBEL-STAR-2AMBER	LXM2-PL01-0000	588-592	70	78	350	65
	REBEL-STAR-BLUE23	LXML-PB01-0023	460-490	23.5	28	350	25
	REBEL-STAR-BLUE30	LXML-PB01-0030	460-490	30	35	350	32
	REBEL-STAR-RED30	LXML-PD01-0030	620-645	30	38	350	37
	REBEL-STAR-RED40	LXML-PD01-0040	620-645	40	42	350	41
	REBEL-STAR-CYAN70	LXML-PE01-0070	490-520	70	76	350	69
	REBEL-STAR-REDORANGE50	LXML-PH01-0050	610-620	50	52	350	51
	REBEL-STAR-AMBER30	LXML-PL01-0030	584.5-597	30	36	350	35
	REBEL-STAR-GREEN90	LXML-PM01-0090	520-550	90	95	350	86
	REBEL-STAR-GREEN100	LXML-PM01-0100	520-550	100	102	350	93
	REBEL-STAR-RB425	LXML-PR01-0425	440-460	425	480	350	435
	REBEL-STAR-ES-RB	LXML-PR02	440-460	900	970	700	462

7-LED Modular Solution

The 7-LED modular solution offers the flexibility to assemble a modular LED solution specific for your LED luminaire. By selecting the light engine with the color temperature and the optical beam pattern appropriate for the application, a system can be assembled together with a heat sink for a complete solution. Suitable applications for this 7-LED module include downlights, spot lights and track lights.

LED LIGHT ENGINES

Series	# LEDs	CCT	Flux (lm) @350mA ¹	Flux (lm) @700mA ¹	Connection Option	Optics	Part Number	LED Series
50mm Diameter	7	5500K	730-810	1300-1440	Poke-In	—	GLV92C50501/CN-LG07W00T	LXML-PWC2
		4000K	700-780	1250-1380	Poke-In	—	GLV92C50501/CN-LG07D40T	LXML-PWN2
		3000K	585-660	1045-1170	Poke-In	—	GLV92C50501/CN-LA07S30Q	LXH8-PW30

OPTICAL

Supplier	Size	Beam Angle	Description	Part Number	Requires Holder	Optic Holder
General Luminaire	50mm Diameter 7-LED Lens	22°	Spot	GLVA1BS07Y50	✓	GLVA10000X50
		27°	Narrow	GLVA1BN07Y50	✓	
		42°	Flood	GLVA1BF07Y50	✓	
		55°	Wide	GLVA1BW07Y50	✓	
		120°	7-LED Diffuser	GLVA1DF50	✓	

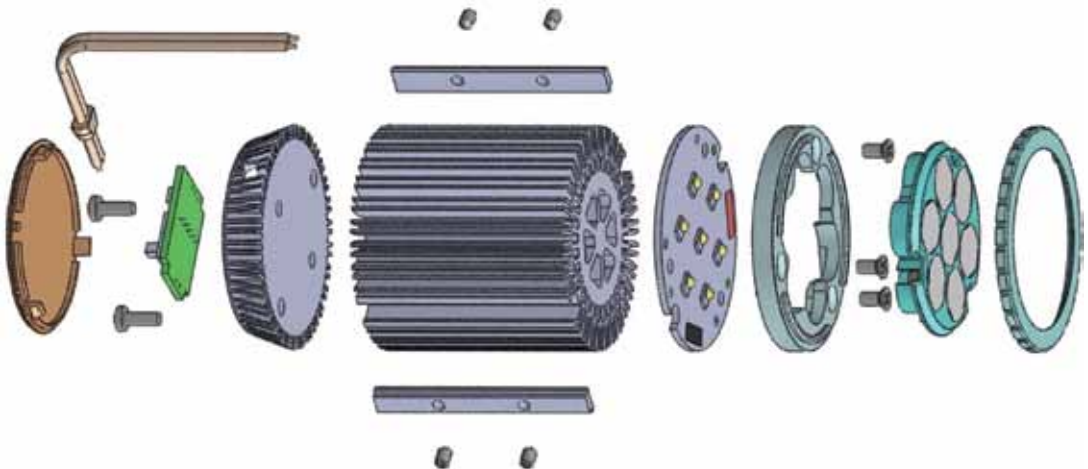
THERMAL MANAGEMENT

Supplier	Length (mm)	Width (mm)	Height (mm)	Thermal Resistance (°C/W)	Part Number	Drive Current (mA)
General Luminaire	50	50	35	5.70	GLVA2C50501A35	350
	50	50	50	4.40	GLVA2C50501A50	420
	50	50	80	3.30	GLVA2C50501A80	510

¹ Light Output calculated based on T_J=85°C through Future Lighting Solutions Usable Light Tool. Does not include optical losses.

For more information on simpleLED go to: www.FutureLightingSolutions.com/simpleLED

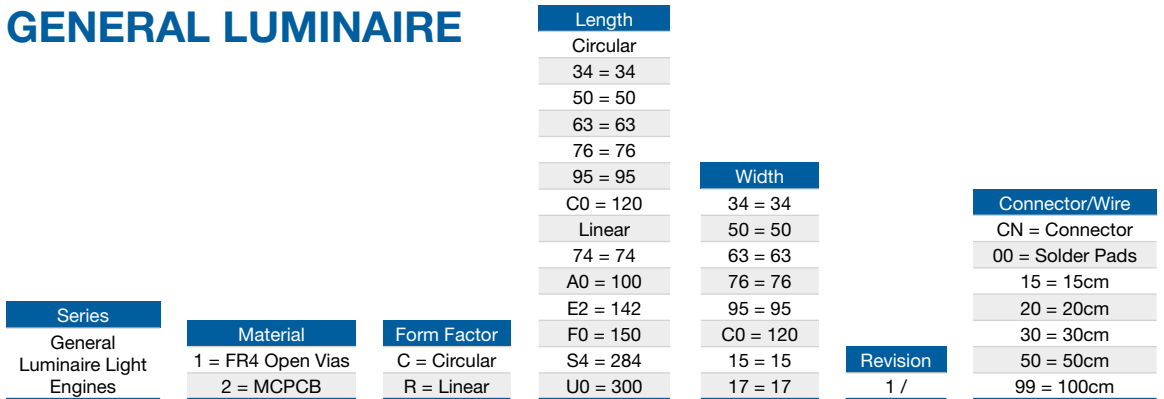
Note: Customizable options available. Refer to part number builder on pages 67 & 68 for more details.





Part Number Builder

GENERAL LUMINAIRE



GLV9XXAABB1/CC-LGDDEEEGHHH

LED Series	LED QTY	LED CCT	LED Min Flux	Optics
LG = LUXEON Rebel ES	03	S27 = ANSI 2700K	L = 80lm+ @350mA	OBS = 18 degree, single lens
LL = LUXEON Rebel GP	04	S30 = ANSI 3000K	M = 90lm+ @350mA	OBN = 25 degree, single lens
LB = LUXEON Rebel Illum. Micro	07	S35 = ANSI 3500K	N = 100lm+ @350mA	OBF = 38 degree, single lens
LE = LUXEON Rebel Illum.	09	S40 = ANSI 4000K	P = 120lm+ @700mA	<u>OBS = 52/55 degree, single lens</u>
LS = LUXEON S	12	S50 = ANSI 5000K	Q = 140lm+ @700mA	
LA = LUXEON A	18	C27 = ANSI 2700K Micro	R = 160lm+ @700mA	
	24	C30 = ANSI 3000K Micro	S = 180lm+ @700mA	
		D40 = 4000K	T = 200lm+ @700mA	
		W50 = 5000K		
		W00 = 5600K		
		W65 = 6500K		
		Rxx = Special Bin (5A, 5B etc.)		
		00R = Red		
		00G = Green		
		00B = Blue		
		00A = Amber		
		00P = PC Amber		

Part Number Builder

RENA

Series
05700R = Linear 1 50x25mm
05701R = Linear 3 150x25mm
05702R = Linear 6 300x25mm
05704R = Linear 3 75x30mm
05705R = Linear 6 150x30mm
05711R = Circular 3 45mm Dia.
05712R = Circular 6 45mm Dia.
05713R = Circular 9 75mm Dia.
05706R = Square 9 75x75mm
05707R = Square 4 50x50mm
05703R = Square 4 75x75mm
05708R = Square 9 50x50mm

Color Temperature
0000 = Royal Blue
1111 = Cyan
2222 = Red
3333 = Red-Orange
4444 = Amber
5555 = Green
6666 = Blue
7777 = Neutral-White
8888 = Warm-White
9999 = Cool-White

Min CRI
XX = No Min CRI
60 = Min 60
70 = Min 70
80 = Min 80
90 = Min 90

Min Flux
065 = Min 65
066 = Min 66
067 = Min 67
070 = Min 70
075 = Min 75
080 = Min 80
100 = Min 100
120 = Min 120
140 = Min 140
150 = Min 150
160 = Min 160
170 = Min 170
180 = Min 180
200 = Min 200
220 = Min 220
425 = Min 425mW
500 = Min 500mW

XXXXXXAAAABBCCCDEFG

Connector
C = Connector
N = Solder Pads

Optic Type
X = No Optics
A = Carclo 10mm
B = Carclo 20mm
D = Carclo Bubble

Optics Holder
X= No Holder
A = Carclo Single Black Holder 10235
B = Carclo Single White Holder 10236
C = Carclo Single Clear Holder 10237

Optics Beam Angle
X = No Lens
10 and 20 mm optics:
C = Narrow Beam
D = Narrow Beam Frosted
E = Medium Beam
F = Medium Beam Frosted
G = Wide Beam
H = Wide Beam Frosted
K = Elliptical Beam
L = Elliptical Beam 90°
Bubble optics:
R = Ultra Wide 120°
S = Ultra Wide 130°



Optics



Supplier	Size	Beam Angle	Description	Part Number	Requires Holder	Compatible Boards
Carclo-Optics	20mm Diameter Lens	9°	Plain Tight	10193	✓	RENA 05700 Linear 1 05701 Linear 3 05702 Linear 6 05704 Linear 3 05705 Linear 6 05703 Square 4 05708 Square 9
		12°	Frosted Narrow	10194	✓	
		19°	Rippled Medium	10208	✓	
		19°	Medium Frosted	10195	✓	
		24°	Rippled Wide	10209	✓	
		35°	Wide Frosted	10196	✓	
		45 x 9.5°	Elliptical	10197	✓	
		9 x 45°	Elliptical Orthogonal	10198	✓	
		100°	Bubble Downlight	10628		
		120°	Bubble 120	10403		
	130°	Bubble 130	10406			
	180°	Bubble Hemispherical	10620			
	20mm Diameter Lens Holders	-	Black Holder	10235		
		-	White Holder	10236		
		-	Clear Holder	10237		
		-	50mm Triple White Holder	10289		05711 Circular 3
		-	50mm Triple Black Holder	10309		
	10mm Diameter Lens	18°	Narrow	10412		All RENA Light Engines
27°		Medium Frosted	10413			
44°		Wide Frosted	10414			
46 x 19°		Elliptical	10415			
General Luminaire	13.5mm Diameter Lens*	18°/22°	Spot	GLVA1BS01H		All General Luminaire Light Engines
		25°/27°	Narrow	GLVA1BN01H		
		37°/43°	Flood	GLVA1BF01H		
		52°/55°	Wide	GLVA1BW01H		
	50mm Diameter 7-LED Lens*	20°/22°	Spot	GLVA1BS07Y50	✓	GLV92C50501 Series
		25°/27°	Narrow	GLVA1BN07Y50	✓	
		37°/TBD	Flood	GLVA1BF07Y50	✓	
		52°/55°	Wide	GLVA1BW07Y50	✓	
-	7-LED Diffuser	GLVA1DF50	✓			
-	7-LED Optic Holder	GLVA10000X50				

* LUXEON® Rebel / LUXEON Rebel ES

Power



DRIVER SOLUTIONS @ 350mA – 120 VAC

LEDs*	Part Number	Description
1	LEDUNIA0350C12F	120-240 VAC Philips Lighting 12 V 4 W
2	LEDUNIA0350C12F	120-240 VAC Philips Lighting 12 V 4 W
3	LEDUNIA0350C12F	120-240 VAC Philips Lighting 12 V 4 W
4	LED120A0350C33F	120 VAC Philips Lighting 33 V 12 W
5	LED120A0350C33F	120 VAC Philips Lighting 33 V 12 W
6	LED120A0350C33F	120 VAC Philips Lighting 33 V 12 W
7	LED120A0350C33F	120 VAC Philips Lighting 33 V 12 W
8	LED120A0350C33F	120 VAC Philips Lighting 33 V 12 W
9	LED120A0350C33F	120 VAC Philips Lighting 33 V 12 W
10	LPC-20-350	90-264 VAC Mean Well 48 V 17 W
11	LPC-20-350	90-264 VAC Mean Well 48 V 17 W
12	LPC-20-350	90-264 VAC Mean Well 48 V 17 W
13	LPC-20-350	90-264 VAC Mean Well 48 V 17 W
14	LPC-20-350	90-264 VAC Mean Well 48 V 17 W
16	LPC-20-350	90-264 VAC Mean Well 48 V 17 W
18	EUC-025S070DS	90-305 VAC Inventronics 72 V 25 W 0-10V Dim
24	EUC-040S035DS	90-305 VAC Inventronics 114 V 40 W 0-10V Dim

DRIVER SOLUTIONS @ 350mA – 230 VAC

LEDs*	Part Number	Description
1	LEDUNIA0350C12F	120-240 VAC Philips Lighting 12 V 4 W
2	LEDUNIA0350C12F	120-240 VAC Philips Lighting 12 V 4 W
3	LEDUNIA0350C12F	120-240 VAC Philips Lighting 12 V 4 W
4	913700615882	230 VAC Philips Lighting 33 V 12 W
5	913700615882	230 VAC Philips Lighting 33 V 12 W
6	913700615882	230 VAC Philips Lighting 33 V 12 W
7	913700615882	230 VAC Philips Lighting 33 V 12 W
8	913700615882	230 VAC Philips Lighting 33 V 12 W
9	913700615882	230 VAC Philips Lighting 33 V 12 W
10	CL350-240-56V	198-265 VAC Harvard Engineering 56 V 20 W
11	CL350-240-56V	198-265 VAC Harvard Engineering 56 V 20 W
12	CL350-240-56V	198-265 VAC Harvard Engineering 56 V 20 W
13	CL350-240-56V	198-265 VAC Harvard Engineering 56 V 20 W
14	CL350-240-56V	198-265 VAC Harvard Engineering 56 V 20 W
16	CL350-240-56V	198-265 VAC Harvard Engineering 56 V 20 W
18	EUC-025S035DS	90-305 VAC Inventronics 72 V 25 W
24	EUC-040S035DS	90-305 VAC Inventronics 114 V 40 W

* Total number of LEDs in series used in the system. Includes multiple LED boards connected together.
Refer to Philips Lumileds AB32 for electrical isolation considerations.



PHILIPS FORTIMO LED STRIP AND LED LINE DRIVER SOLUTIONS

Description	Input Voltage	Dimming	Wattage	# of LED Strips	# of LED Line 3R	# of LED Line 1R	Part Number
Xitanium LED Driver	120-277VAC	0-10V	75W	4 - 10	5 - 12	3 - 7	XI075C200V054XPT1
Xitanium LED Driver	120-277VAC	DALI	75W	4 - 10	5 - 12	3 - 7	XI075C200V054YPT1



Power *(continued)*



DRIVER SOLUTIONS @ 700mA – 120 VAC

LEDs*	Part Number	Description
1	LEDUNIA0700C12F	120-230 VAC Philips Lighting 12 V 8 W
2	LEDUNIA0700C12F	120-230 VAC Philips Lighting 12 V 8 W
3	LEDUNIA0700C12F	120-230 VAC Philips Lighting 12 V 8 W
4	LED120A0700C24F	120 VAC Philips Lighting 24 V 17 W
5	LED120A0700C24F	120 VAC Philips Lighting 24 V 17 W
6	LED120A0700C24F	120 VAC Philips Lighting 24 V 17 W
7	LED120A0700C28FO	120 VAC Philips Lighting 28 V 20 W
8	913701213402	120-277 VAC Philips (Fortimo) 56 V 39 W 0-10V Dim
9	913701213402	120-277 VAC Philips (Fortimo) 56 V 39 W 0-10V Dim
10	913701213402	120-277 VAC Philips (Fortimo) 56 V 39 W 0-10V Dim
11	913701213402	120-277 VAC Philips (Fortimo) 56 V 39 W 0-10V Dim
12	913701213402	120-277 VAC Philips (Fortimo) 56 V 39 W 0-10V Dim
13	913701213402	120-277 VAC Philips (Fortimo) 56 V 39 W 0-10V Dim
14	913701213402	120-277 VAC Philips (Fortimo) 56 V 39 W 0-10V Dim
16	913701213402	120-277 VAC Philips (Fortimo) 56 V 39 W 0-10V Dim
18	EUC-050S070DT	90-305 VAC Inventronics 72 V 50 W 0-10V Dim
24	EUC-075S070DT	90-305 VAC Inventronics 108 V 75 W 0-10V Dim

DRIVER SOLUTIONS @ 700mA – 230 VAC

LEDs*	Part Number	Description
1	LEDUNIA0700C12F	120-230 VAC Philips Lighting 12 V 8 W
2	LEDUNIA0700C12F	120-230 VAC Philips Lighting 12 V 8 W
3	LEDUNIA0700C12F	120-230 VAC Philips Lighting 12 V 8 W
4	913700615982	230 VAC Philips Lighting 24 V 17 W
5	913700615982	230 VAC Philips Lighting 24 V 17 W
6	913700615982	230 VAC Philips Lighting 24 V 17 W
7	CL700-240	198-265 VAC Harvard Engineering 48 V 33 W
8	CL700-240	198-265 VAC Harvard Engineering 48 V 33 W
9	CL700-240	198-265 VAC Harvard Engineering 48 V 33 W
10	CL700-240	198-265 VAC Harvard Engineering 48 V 33 W
11	CL700-240	198-265 VAC Harvard Engineering 48 V 33 W
12	CL700-240	198-265 VAC Harvard Engineering 48 V 33 W
13	CL700-240	198-265 VAC Harvard Engineering 48 V 33 W
14	EUC-040S070DS	90-305 VAC Inventronics 54 V 38 W 0-10V Dim
16	EUC-040S070DS	90-305 VAC Inventronics 54 V 38 W 0-10V Dim
18	EUC-050S070DT	90-305 VAC Inventronics 72 V 50 W 0-10V Dim
24	EUC-075S070DT	90-305 VAC Inventronics 108 V 75 W 0-10V Dim

* Total number of LEDs in series used in the system. Includes multiple LED boards connected together.

Refer to Philips Lumileds AB32 for electrical isolation considerations.

Thermal



LINEAR SOLUTIONS

Supplier	Part Number	Length (mm)	Width (mm)	Height (mm)	Thermal Resistance (°C/W)	simpleLED Series	Drive Current (mA)
Aavid Thermalloy	615203B01969G	50	50	11.4	20.72	05700R Linear 1	350
	700353B02953G	75	27.9	8.9	11.28	05704R Linear 3 GLV91R74151 Linear 3	350
	619953B05906G	150	18.9	6.1	10.16	05701R Linear 3 GLV91RE2151 Linear 4	350
	700353B05906G	150	27.9	8.9	7.98	05705R Linear 6	350
	634553B11811G	300	30.1	6.6	6.98	05702R Linear 6 GLV91RS4151 Linear 4	350
	676053B01969G	50	24	15	10.80	05700R Linear 1	700
	625603B05906G	150	25.4	31.8	4.78	05701R Linear 3 GLV91RE2151 Linear 4	700
	652453B05906G	150	32	41.9	3.16	05705R Linear 6	700
	652453B11811G	300	32	41.9	2.23	05702R Linear 6 GLV91RS4151 Linear 4	700
	652453B02953G	75	32	41.9	4.47	05704R Linear 3 GLV91R74151 Linear 3	700

SQUARE SOLUTIONS

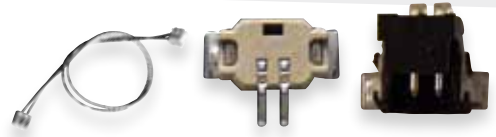
Supplier	Part Number	Length (mm)	Width (mm)	Height (mm)	Thermal Resistance (°C/W)	simpleLED Series	Drive Current (mA)
Aavid Thermalloy	799303B01799G	45.7	45.7	7	12.29	05711R Circular 3	350
	792003B01299G	33	33	12.24	12.24	05707R Square 4	350
	609553B02681G	68.1	68.1	10.2	6.21	05703R Square 4 05706R Square 9	350
	646353B01799G	45.7	45.7	16.3	6.04	05712R Circular 6	350
	612153B01846G	46.9	46.9	31.9	5.79	05711R Circular 3	700
	631353B02098G	53.3	53.3	44.4	3.38	05707R Square 4	700
	790003B02618G	66.5	66.5	68.6	1.71	05712R Circular 6	700
	739253B02886G	73.3	73.3	25.4	1.48	05703R Square 4	700
						05706R Square 9	
						05708R Square 9 05713R Circular 9	

CIRCULAR SOLUTIONS

Supplier	Part Number	Length (mm)	Width (mm)	Height (mm)	Thermal Resistance (°C/W)	simpleLED Series	Drive Current (mA)
General Luminaire	GLVA2C50501A35	50	50	35	5.70	GLV92C50501 Circular 7	350
	GLVA2C50501A50	50	50	50	4.40		420
	GLVA2C50501A80	50	50	80	3.30		510
Khatod	KHS500	45	45	15	10.30	05711R Circular 3	350



Connectors



RENA CIRCULAR SOLUTIONS

Series #	Light Engine Form Factor			Driver Type	Connectivity Options (Part #)	
	LED Count	Size (mm)	Board Connector		Driver To Light Engine	Light Engine To Light Engine
05711R	3	45	Mini-CT	LED Driver with Leads or	1969341-2 (150mm)	N/A
05712R	6	45			1969341-3 (300mm) (Mini-CT to Leads) or	
05713R	9	75		LED Driver with CT Connector	1969328-5 (150mm) (Mini-CT to CT)	

RENA LINEAR SOLUTIONS

Size (mm)	Series #	Light Engine Form Factor		Driver Type	Connectivity Options (Part #)	
		LED Count	Board Connector		Driver To Light Engine	Light Engine To Light Engine
50 x 25	05700R	1	CT	LED Driver with Leads or	1969336-3 (300mm) (CT to Leads)	1969343-5 (150mm)
75 x 30	05704R	3			1969343-6 (300mm) (CT to CT)	
150 x 25	05701R	3		LED Driver with CT Connector	1969343-5 (150mm)	(White Cables)
150 x 30	05705R	6			1969343-6 (300mm) (CT to CT)	
300 x 25	05702R	6				

RENA SQUARE SOLUTIONS

LED Count	Light Engine Form Factor			Driver Type	Connectivity Options (Part #)	
	Size (mm)	Series #	Board Connector		Driver To Light Engine	Light Engine To Light Engine
4	50 x 50	05707R	mini-CT	LED Driver with Leads or CT Connector	1969341-2 (150mm)	1969342-4 (50mm) (Mini-CT to Mini-CT cable) (White Cable)
9	50 x 50	05708R			1969341-3 (300mm) (Mini-CT to Leads) or 1969328-5 (150mm) (CT to Mini-CT)	
4	75 x 75	05703R	CT	LED Driver with Leads or CT Connector	1969336-3 (300mm) (CT to Leads) or	1969343-5 (150mm) 1969343-6 (300mm) (CT to CT) (White Cables)
9	75 x 75	05706R			1969343-5 (150mm) 1969343-6 (300mm) (CT to CT)	

PHILIPS FORTIMO LED STRIP AND LED LINE SOLUTIONS

Description	Length (mm)	Part Number
LED Line LV 3R Cable 2-Channel Driver-to-Board	600	929000690203
LED Line LV 3R Cable 1-Channel Driver-to-Board	600	929000690303
LED Line LV 1R Cable 2-Channel Driver-to-Board and NTC	600	929000681303
LED Line LV 1R Cable 1-Channel Driver-to-Board and NTC	600	929000681403
LED Line LV Cable Board-to-Board	46	929000681603
LED Line LV Cable Board-to-Board	115	929000681703
LED Line LV Cable Board-to-Board	190	929000681803

LED LIGHT MODULES

PHILIPS FORTIMO DOWNLIGHT MODULE

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PHILIPS FORTIMO SPOTLIGHT MODULE

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PHILIPS FORTIMO ENHANCED SPECTRUM DOWNLIGHT MODULE

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PHILIPS FORTIMO TWISTABLE DOWNLIGHT MODULE

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PHILIPS FORTIMO LINEAR LIGHT MODULE

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PHILIPS FORTIMO LED DISK AND DECORATIVE MODULES

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PHILIPS FORTIMO HIGH BRIGHTNESS MODULE

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LEXEL DOWNLIGHT MODULE

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LEXEL SPOTLIGHT MODULE

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Philips LED Light Modules

Philips Lighting is enabling breakthroughs in energy savings and creating new value in lighting with the introduction of LED modules that address the needs of many lighting applications.

Designed for ease of integration into existing or new fixtures, these light sources deliver high quality illumination with enough lumens to compete directly with conventional alternatives.

All modules are future-proof, meaning their form factor and light output will not change as the output of LEDs increases.

What's more is that color consistency and quality are guaranteed by a modular approach.

If you are looking for a consistent white light in a simple sustainable package, then design your light fixture with Fortimo or Lexel LED Light Modules.



Refer to the next few pages on the various product families offered by Philips Lighting or visit www.FutureLightingSolutions.com/Fortimo for more information.



Philips Fortimo Downlight Module



LED LIGHT MODULES

Region	Description	Initial Lumens	Min CRI	CCT (K)	Module Input Power (W)	System Efficacy (Lm/W)	Input Voltage (V)	Module B50 L70 (Hours) T case max 65°C	Part Number
North America	Fortimo LED DLM 1100 14W/827UL Gen3	1100	>80	2700	14	57	120-277	50K	929000671003
	Fortimo LED DLM 1100 14W/830UL Gen3	1100	>80	3000	14	60	120-277	50K	929000671103
	Fortimo LED DLM 1100 13W/835UL Gen3	1100	>80	3500	13	62	120-277	50K	929000671203
	Fortimo LED DLM 1100 13W/840UL Gen3	1100	>80	4000	13	65	120-277	50K	929000671303
	Fortimo LED DLM 1300 16W/827UL Gen3	1300	>80	2700	16	59	120-277	50K	929000671403
	Fortimo LED DLM 1300 16W/830UL Gen3	1300	>80	3000	16	61	120-277	50K	929000671503
	Fortimo LED DLM 1300 15W/835UL Gen3	1300	>80	3500	15	64	120-277	50K	929000671603
	Fortimo LED DLM 1300 15W/840UL Gen3	1300	>80	4000	15	66	120-277	50K	929000671703
	Fortimo LED DLM 2000 26W/827UL Gen3	2000	>80	2700	26	60	120-277	50K	929000671803
	Fortimo LED DLM 2000 26W/830UL Gen3	2000	>80	3000	26	61	120-277	50K	929000671903
	Fortimo LED DLM 2000 25W/835UL Gen3	2000	>80	3500	25	64	120-277	50K	929000672003
	Fortimo LED DLM 2000 24W/840UL Gen3	2000	>80	4000	24	67	120-277	50K	929000672103
	Fortimo LED DLM 2800 42W/827UL Gen3	2800	>80	2700	42	60	120-277	50K	929000672203
	Fortimo LED DLM 2800 42W/830UL Gen3	2800	>80	3000	42	60	120-277	50K	929000672303
	Fortimo LED DLM 2800 39W/835UL Gen3	2800	>80	3500	39	64	120-277	50K	929000672403
	Fortimo LED DLM 2800 39W/840UL Gen3	2800	>80	4000	39	66	120-277	50K	929000672503
EMEA/Asia	Fortimo LED DLM 1100 12W/835UL Gen3+	1100	>80	3000	14	79	220-240	50K	929000805203
	Fortimo LED DLM 1100 11W/840UL Gen3+	1100	>80	4000	13	87	220-240	50K	929000805303
	Fortimo LED DLM 2000 23W/830 Gen3+	1100	>80	3000	26	74	220-240	50K	929000805403
	Fortimo LED DLM 2000 21W/840 Gen3+	2000	>80	4000	24	81	220-240	50K	929000805503
	Fortimo LED DLM 3000 39W/830 Gen3+	2000	>80	3000	44	63	220-240	50K	929000814103
	Fortimo LED DLM 3000 35W/840 Gen3+	2000	>80	4000	40	69	220-240	50K	929000814203

Philips Fortimo Downlight Module *(continued)*

POWER SOLUTIONS

Region	Description	Input Voltage (VAC)	Dimming ³	Wattage	Part Number	Recommended Driver Selection		
						1100lm	2000lm	2800/3000lm
North America	Xitanium LED Driver	120-277	0-10V/TE ¹	25W	XI025C100V036XPL1M	✓		
	Xitanium LED Driver	120	0-10V/TE	25W	XR025C100V036XPM1M	✓		
	Xitanium LED Driver	120	DALI	25W	XR025C100V036LPM1M	✓		
	Xitanium LED Driver	277	0-10V/TE	25W	XV025C100V036DPM1M	✓		
	Xitanium LED Driver	120-277	0-10V/TE	39W	913701213402	✓	✓	
	Xitanium LED Driver	120-277	0-10V/TE ¹	50W	XI050C100V054XPL1M			✓
	Xitanium LED Driver	120	0-10V/TE	50W	XR050C100V054XPM1M			✓
	Xitanium LED Driver	277	0-10V	50W	XV050C100V054DPM1M			✓
EMEA/ Asia ²	Fortimo LED Driver 1100-3000	220-240	NON-DIMMING	46W	929000614403	✓	✓	✓
	Fortimo LED Driver 1100-2000 TD/I	220-240	TD/I	46W	929000465203	✓	✓	✓
	Xitanium 17W 0.3-0.7A 24V TE/I 230V	220-240	TE/I	17W	929000600103	✓		
	Xitanium 25W 0.3-0.7A 36V TE/I 230V	220-240	TD/TE/I	25W	929000600303		✓	
	Xitanium 50W LH 0.3-1A 62V TD/TE/I 230V	220-240	TD/TE/I	50W	929000617103		✓	✓

¹ 120VAC Trailing Edge Dimming Only

² Other drivers may be available, contact your Future Lighting Solutions sales representative for more options

³ TD = Touch Dali, TE = Trailing Edge, I = Independent

CONNECTOR SOLUTIONS

Region	Description*	Length			
		250mm	500mm	600mm	840mm
North America	Fortimo DLM 7-Wire Cable with Fan Wire	—	929000690703	—	929000690603
	Fortimo DLM 9-Wire Cable with Fan Wire	—	929000663703	—	929000683803
	Fortimo DLM 6-Wire Cable with Fan Wire	—	929000683903	—	929000684003
EMEA/ Asia	Fortimo LED DLM Cable (fixed output/dimmable)	929000463103	—	—	—
	Fortimo LED DLM Cable (with protective earth connection)	—	—	929000478903	—
	Fortimo LED DLM Cable (without protective earth cable)	—	—	929000484803	—

*Includes wire for Nuventix SynJet Cooler and other options.

THERMAL MANAGEMENT SOLUTIONS

Region	Fortimo LED DLM Light Module	Nuventix Heat Sink Part Number	Nuventix SynJet Cooler Part Number	Nuventix Wire Harness
Worldwide	Fortimo LED DLM 1100/1300 - T _{amb} 40°C	HSSLS-CALBL-003	—	—
	Fortimo LED DLM 2000 - T _{amb} 40°C	HSSLS-CALBL-003	SSSLS-CM012-017	WALLS-C4600-001
	Fortimo LED DLM 2800/3000lm - T _{amb} 40°C	HSSLS-CALBL-003	SSSLS-CM012-017	WALLS-C4600-001

OPTICAL SOLUTIONS

Description	Alux-Luxar Aluminum Square		Alux-Luxar Aluminum Round	
	Specular 2x35	Diffuse 2x32	Specular 2x35	Diffuse 2x20
Fortimo LED DLM Reflectors	FLC 100	FLC 200	FLC 600	FLC 700

Philips Fortimo Spotlight Module



LED LIGHT MODULES

Region	Description	Initial Lumens	CRI	CCT (K)	Module Input Power* (W)	System Efficacy* NA/EMEA (Lm/W)	Input Voltage (V)	Module B50 L70 (Hours) T case max 65 C°	Part Number
World-wide	Fortimo LED SLM 800 10W/827 Gen2	800	>80	2700	10	77 / -	120-277	50K	929000697903
	Fortimo LED SLM 800 11W/830 Gen2	800	>80	3000	11	76 / -	120-277	50K	929000698003
	Fortimo LED SLM 800 10W/835 Gen2	800	>80	3500	10	76 / -	120-277	50K	929000698103
	Fortimo LED SLM 800 10W/840 Gen2	800	>80	4000	10	74 / -	120-277	50K	929000698203
	Fortimo LED SLM 800 13W/927 Gen2	800	>90	2700	13	78 / -	120-277	50K	929000698303
	Fortimo LED SLM 800 12W/930 Gen2	800	>90	3000	12	78 / -	120-277	50K	929000698403
	Fortimo LED SLM 1100 15W/827 Gen2	1100	>80	2700	15	79 / -	120-277	50K	929000674703
	Fortimo LED SLM 1100 14W/830 Gen2	1100	>80	3000	14	79 / -	120-277	50K	929000674903
	Fortimo LED SLM 1100 13W/835 Gen2	1100	>80	3500	13	79 / -	120-277	50K	929000675103
	Fortimo LED SLM 1100 12W/840 Gen2	1100	>80	4000	12	78 / -	120-277	50K	929000675203
	Fortimo LED SLM 1100 20W/927 Gen2	1100	>90	2700	20	45 / -	120-277	50K	929000674803
	Fortimo LED SLM 1100 18W/930 Gen2	1100	>90	3000	18	50 / -	120-277	50K	929000675003
	Fortimo LED SLM 1100 17W/830 Gen2 Tight Beam	1100	>80	3000	17	54 / -	120-277	50K	929000659403
	Fortimo LED SLM 2000 26W/827 Gen2	2000	>80	2700	26	67 / 69	120-277	50K	929000675403
	Fortimo LED SLM 2000 24W/830 Gen2	2000	>80	3000	24	42 / 74	120-277	50K	929000675803
	Fortimo LED SLM 2000 23W/835 Gen2	2000	>80	3500	23	76 / 77	120-277	50K	929000676203
	Fortimo LED SLM 2000 20W/840 Gen2	2000	>80	4000	20	83 / 86	120-277	50K	929000676403
	Fortimo LED SLM 2000 35W/927 Gen2	2000	>90	2700	35	49 / 52	120-277	50K	929000675603
	Fortimo LED SLM 2000 32W/930 Gen2	2000	>90	3000	32	54 / 57	120-277	50K	929000676003
	Fortimo LED SLM 3000 42W/827 Gen2	3000	>80	2700	42	62 / 64	120-277	50K	929000676503
Fortimo LED SLM 3000 39W/830 Gen2	3000	>80	3000	39	66 / 69	120-277	50K	929000676903	
Fortimo LED SLM 3000 40W/835 Gen2	3000	>80	3500	40	65 / 68	120-277	50K	929000677303	
Fortimo LED SLM 3000 30W/840 Gen2	3000	>80	4000	30	71 / 75	120-277	50K	929000677503	

* Specifications may vary depending on the Xitanium LED driver used in the system.

Philips Fortimo Spotlight Module *(continued)*

POWER SOLUTIONS

Region	Description	Housing- EMEA ³	Input Voltage	Dimming ¹	Watt- age	Part Number	Recommended Driver Selection			
							800 lm	1100 lm	2000 lm	3000 lm
North America	Xitanium LED Driver	—	120-277VAC	0-10V/TE ²	25W	XI025C100V036XPL1	✓	✓		
	Xitanium LED Driver	—	120VAC	0-10V/TE	25W	XR025C100V036XPM1	✓	✓		
	Xitanium LED Driver	—	120VAC	DALI	25W	XR025C100V036LPM1	✓	✓		
	Xitanium LED Driver	—	277VAC	0-10V/TE	25W	XV025C100V036DPM1	✓	✓		
	Xitanium LED Driver	—	120-277VAC	0-10V/TE	39W	913701213402	✓	✓	✓	
	Xitanium LED Driver	—	120-277VAC	0-10V/TE ²	50W	XI050C100V054XPL1			✓	✓
	Xitanium LED Driver	—	120VAC	0-10V/TE	50W	XR050C100V054XPM1			✓	✓
	Xitanium LED Driver	—	277VAC	0-10V	50W	XV050C100V054DPM1			✓	✓
EMEA/ Asia	Xitanium LED Driver	Linear	220-240VAC	NON-DIMMING	25W	929000600203	✓	✓		
	Xitanium LED Driver	Linear	220-240VAC	TE/I	25W	929000600303	✓	✓		
Asia	Xitanium LED Driver	Fortimo	220-240VAC	NON-DIMMING	50W	929000636303			✓	✓
	Xitanium LED Driver	Linear	220-240VAC	TD/TE/I	50W	929000617103			✓	✓

¹ TD = Touch and Dali, TE = Trailing Edge, I = Independent

² 120VAC only for Trailing Edge Dimming

³ Linear housing = 190*46*32mm, Fortimo housing = 141*75*32mm

CONNECTOR SOLUTIONS

Region	Description	Part Number
North America	Fortimo LED SLM 500mm Length	442240073981*
	Fortimo LED SLM Cable 60cm	929000619203
EMEA/Asia	Fortimo LED SLM Cable 60cm 12V	929000632903*
	Fortimo LED SLM Cable 25cm	929000614703
	Fortimo LED SLM Cable 60cm 12V /I	929000672803*

* Includes wire for SynJet Cooler and other options.

DRIVER HOUSING DIMENSIONS

	Linear Housing	HID-PV	Fortimo	Square Housing
Housing Size	190 x 46 x 32	110 x 75 x 32	141 x 75 x 32	220 x 83 x 35



THERMAL MANAGEMENT SOLUTIONS

Region	Description	Max T ambient (°C)	Nuventix Heat Sink Part Number	Nuventix SynJet Cooler Part Number	Nuventix Wire Harness
Worldwide	Fortimo LED SLM 1100lm G2 Tight Beam	40	NX300104		
	Fortimo LED SLM 2000lm G2 8xx	40	NX300104	NX200102	WALLS-C4600-001
	Fortimo LED SLM 2000lm G2 9xx	40	NX300104	NX200102	WALLS-C4600-001
	Fortimo LED SLM 3000lm G2 8xx	40	NX300104	NX200102	WALLS-C4600-001

Note: Listed part numbers are recommended solutions. Other options are available dependent on application, contact your Future Lighting Solutions sales representative for more details.

OPTICAL SOLUTIONS - REFLECTORS

Description		Alux-Luxar Round Spun (Post-Anodized) Reflectors			
Fortimo LED SLM Reflectors	Specular 2x14°	Specular 2x20°	Specular 2x10°	Specular 2x19°	
	FLC 1300*	FLC 1600	FLC 1900	FLC 2500	
	Alux-Luxar Round Segmented (Pre-Anodized) Reflectors				
	Diffuse 2x13.5°	Diffuse 2x18.5°	Diffuse 2x11°	Diffuse 2x18°	
	FLC 1400	FLC 1700	FLC 2000	FLC 2600	
	Alux-Luxar Square Segmented (Pre-Anodized) Reflectors				
	Diffuse 2x25.5°	Diffuse 2x31.5°	Diffuse 2x24°	Diffuse 2x35.5°	
	FLC 1500	FLC 1800	FLC 2400	FLC 2700	

Note: Mechanically compatible with Nuventix heat sinks.

Philips Fortimo Enhanced Spectrum Downlight Module



LED LIGHT MODULES

Region	Description	Initial Lumens	CRI	CCT(K)	Module Input Power (W)	System Efficacy (Lm/W)	Input Voltage (V)	Module B50 L70 (Hours) T case max 60 C°	Part Number
Worldwide	Fortimo LED ES DLM Module 1800 50W/Food30UL	1800	>70	3000	34	53	120-277	35K	929000498703
	Fortimo LED ES DLM Module 2000 50W/Food40UL	2000	>70	4000	36	55	120-277	35K	929000498803

POWER SOLUTIONS

Region	Description	Input Voltage	Wattage	Part Number
Worldwide	Xitanium LED Driver	120-277VAC	50W	929000478103

CONNECTOR SOLUTIONS

Region	Description	Part Number	
		250mm Length	600mm Length
North America	Fortimo LED ES DLM Module	929000478203	929000484803
EMEA/Asia	Fortimo LED ES DLM Module	929000666103	

THERMAL MANAGEMENT SOLUTIONS

Region	Description	Nuventix Heat Sink Part Number	Nuventix SynJet Cooler Part Number	Nuventix Wire Harness
Worldwide	Fortimo LED ES DLM Module - T _{amb} 40°C	HSSLS-CALBL-003	SSSLS-CM012-017	WALLS-C4600-001

OPTICAL SOLUTIONS

Description	Alux-Luxar Aluminum Square		Alux-Luxar Aluminum Round	
	Specular 2x35°	Diffuse 2x32°	Specular 2x35°	Diffuse 2x20°
Fortimo LED ES DLM Module Reflectors	FLC 100	FLC 200	FLC 600	FLC 700

Philips Fortimo Twistable Downlight Module



LED LIGHT MODULES

Region	Description	Initial Lumens	CRI	CCT (K)	Module Efficacy (Lm/W)	Input Voltage (V)	Module B50 L70 (Hours)		Part Number
							T case max 55°C	T case max 65°C	
North America	Fortimo LED TDLM 1100 21W/827 120V	1100	80	2700	51	120	50K	25K	929000613703
	Fortimo LED TDLM 1100 21W/830 120V	1100	80	3000	55	120	50K	25K	929000613603
	Fortimo LED TDLM 1100 21W/835 120V	1100	80	3500	59	120	50K	25K	929000613803
	Fortimo LED TDLM 1100 21W/840 120V	1100	80	4000	60	120	50K	25K	929000613503
EMEA/Asia	Fortimo TDLM 1100 20W/827 230V	1040	80	2700	52	230	50K	25K	929000498903
	Fortimo TDLM 1100 20W/830 230V	1100	80	3000	55	230	50K	25K	929000499003
	Fortimo TDLM 1100 18W/840 230V	1100	80	4000	62	230	50K	25K	929000499103

POWER SOLUTIONS

Each module features an integrated power solution.

LAMP HOLDER

Region	Description	Input Voltage	Part Number
North America	BJB Fortimo LED Twistable DLM Lamp Holder	100-120 VAC	929000614303
EMEA/Asia	BLB Fortimo LED Twistable DLM Lamp Holder	230 VAC	28.107.1001.54

THERMAL MANAGEMENT SOLUTIONS

Region	Description	Nuventix Heat Sink Part Number	Nuventix Synjet Cooler Part Number	Nuventix Wire Harness
Worldwide	Fortimo LED Twistable DLM 1100 - T _{amb} 40°C	HSSLS-CALCL-012	-	-

OPTICAL SOLUTIONS - REFLECTORS

Description	Alux-Luxar Square Part Number (Pre-Anodized)		Alux-Luxar Round Part Number (Post-Anodized)	
	Specular 2x35°		Specular 2x35°	Diffuse 2x20°
Fortimo LED Twistable DLM 1100 Reflectors	FLC 101		FLC 601	FLC 701

Philips Fortimo Linear Light Module

LED LIGHT MODULES

Region	Description	Initial Lumens	CRI	CCT (K)	Module Input Power (W)	System Efficacy (Lm/W)	Input Voltage (V)	Module B50 L70 (Hours) T case max 65 C°	T ambient (°C)	Part Number	Out-door	In-door
EMEA/ Asia	Fortimo LED LLM 1100 13W/730	1100	70	3000	13	69	220-240	50K	-20	929000634903	✓	
	Fortimo LED LLM 1100 11W/740	1100	70	4000	11	79	220-240	50K	-20	929000616103	✓	
	Fortimo LED LLM 1800 20W/730	1800	70	3000	20	75	220-240	50K	-20	929000635003	✓	
	Fortimo LED LLM 1800 18W/740	1800	70	4000	18	82	220-240	50K	-20	929000615903	✓	
	Fortimo LED LLM 3000 34W/730	3000	70	3000	34	76	220-240	50K	-20	929000611403	✓	
	Fortimo LED LLM 3000 33W/740	3000	70	4000	33	79	220-240	50K	-20	929000611303	✓	
	Fortimo LED LLM 4500 53W/730	4500	70	3000	53	76	220-240	50K	-20	929000611203	✓	
	Fortimo LED LLM 4500 50W/740	4500	70	4000	50	80	220-240	50K	-20	929000611103	✓	
	Fortimo LED LLM 1800 12W/840	1800	80	4000	12	75	220-240	50K	-20	92900061603		✓



POWER SOLUTIONS

Region	Description	Input Voltage	Dimming	Wattage	Recommended Driver Selection				Part Number	Out-door	In-door
					EMEA only						
					1100lm	1800lm	3000lm	4500lm			
EMEA/ Asia	Xitanium 35W Otd	230 VAC	Non-Dimming	35W	✓	✓			929000634003	✓	
	Xitanium 35W Otd	230 VAC	Lumistep 6		✓	✓			929000634103	✓	
	Xitanium 35W Otd	230 VAC	Lumistep 8		✓	✓			929000634203	✓	
	Xitanium 75W sXt	230 VAC	1-10V				✓	✓	913701217502	✓	
	Xitanium LED Driver	120-277 VAC						913701213402		✓	

¹ Otd = Outdoor, sXt = Extreme

CONNECTOR SOLUTIONS

Region	Description	Part Number
EMEA/Asia	Fortimo LLM Cable 250mm	929000483303
	Fortimo LED Cable LLM 600mm	929000633803

THERMAL MANAGEMENT SOLUTIONS

Region	Description	Nuventix Heat Sink Part Number	Nuventix Synjet Cooler Part Number	Nuventix Wire Harness
Worldwide	Fortimo LED LLM US 1100 830/740 - T _{amb} 35°C	NX301100	—	—
	Fortimo LED LLM US 1800 830/740 - T _{amb} 35°C	NX301100	SSCCS-IM012-002	WALLS-C4600-001

Philips Fortimo LED Disk and Decorative Modules (AVAILABLE FOR EMEA & ASIA ONLY)



LED DISK MODULES

Description	Lumen output (typ.)	CRI	CCT (K)	Wattage (typ.)	System Efficacy (lm/W)	Input Voltage (V)	TC Life	Part Number
Fortimo LED Disk module	300	80	2700	7.7	38	220-230	25000 @ 65°	929000662803
Fortimo LED Disk module	800	90	2700	14.5	56	220-230	25000 @ 70°	929000303501
Fortimo LED Disk module	800	80	4000	14.5	56	220-230	25000 @ 70°	929000664608

FORTIMO DECORATIVE MODULE

Description	Lumen Output	CRI	CCT (K)	Module Power (W)	Module Efficacy (lm/W)	Input Voltage (V)	Module B50 L70 (hours) T case max 65°C	Part Number
Fortimo Deco mini spot	300	85	2700	6.5	45	10	50K	929000663008
	340	85	4000	6.5	52.5	10	50K	929000662908
Fortimo Deco mini downlight	300	85	2700	6.5	45	10	50K	929000663108
	340	85	4000	6.5	52.5	10	50K	929000663208
Fortimo Deco mini strip 40D	300	85	2700	6.5	45	10	50K	929000663408
	300	85	4000	6.5	45	10	50K	929000669908
Fortimo Deco mini strip 300 100D	300	85	2700	6.5	45	10	50K	929000663308
	300	85	4000	6.5	45	10	50K	929000670008

POWER SOLUTIONS FOR FORTIMO DECORATIVE MODULES

Description	Input Voltage	Dimming	Number of modules which can be connected in series to driver	Part Number
Xitanium LED Driver 10W	230V	Independent	1	913710053666
Xitanium LED Driver 20/30W	230V	Built-In	2 to 4	913710053866
Xitanium LED Driver 20/30W	230V	Independent	2 to 4	913713220162

Philips Fortimo High Brightness Module



LED LIGHT MODULES

Description	Initial Lumens	CRI	CCT (K)	System Input Power (W)	System Efficacy (lm/W)	Input Voltage (V)	Module B50 L70 (Hours) Tcase Max 85°C	Tambient (°C)	Part Number
Fortimo LED HBMT 4000 35W/757	4000	70	5700	35	105	120-277	50K	-40 to 50	929000695903
Fortimo LED HBMT 4000 35W/740	4000	70	4000	35	110	120-277	50K	-40 to 50	929000695703
Fortimo LED HBMT 6000 54W/757	6000	70	5700	54	108	120-277	50K	-40 to 50	929000695803
Fortimo LED HBMT 6000 54W/740	6000	70	4000	54	104	120-277	50K	-40 to 50	929000695603

POWER SOLUTIONS

Description	Input Voltage	Dimming	Wattage	Driver Part Number
Xitanium 75W 0.35-0.7A GL Prog sXt	120-277VAC	0-10V	75W	929000702302
Xitanium 150W 0.35-0.7A GL Prog sXt	120-277VAC	0-10V	150W	929000702202

CONNECTOR SOLUTION

Description	Part Number
Fortimo LED HBMT 7-Pin Cable Assembly	929000803903

THERMAL MANAGEMENT SOLUTIONS

To optimize the lifetime and amount of light from the Fortimo LED High-Brightness Module system it must operate within specified temperature limits. Passive thermal management can be used by mounting the modules directly to the interior of the luminaire casing to allow heat to be dissipated to the ambient environment.

Future Lighting Solutions offers QLED, a powerful design and simulation software tool that allows lighting designers to perform real time thermal simulations. The Philips Fortimo LED HBM can be modeled in an application factoring in multiple variables to optimize designs.

OPTICAL SOLUTIONS-REFLECTORS

All applications require a specific optical distribution pattern. Future Lighting Solutions in conjunction with Alux-Luxar, a leading aluminum reflector manufacturer, can offer services in custom reflector design to meet the specifications for various applications.

Lexel Downlight Module



LED LIGHT MODULES

Region	Description	Initial Lumens	CRI	CCT (K)	System Input Power (W)	System Efficacy (Lm/W)	Input Voltage (V)	Module B50 L70 (Hours) T case max 65 C°	Part Number
North America	Lexel LED DLM 1100	1000	>80	2700-6500	40	25	120-277	35K	929000463203
EMEA/Asia	Lexel LED DLM 1100	1000	>80	2700-6500	34	30	120-277	35K	929000463203
	Lexel LED DLM 2000	2000	>80	2700-6500	50	38	120-277	35K	929000659903

POWER SOLUTIONS

Region	Description	Input Voltage	Dimming	Wattage	Part Number
Worldwide	Lexel LED DLM Driver	100-277VAC	DALI, DMX/RDM	40W	929000484203

CONNECTOR SOLUTIONS

Region	Description	Part Number	
		250mm	600mm
North America	Lexel LED DLM 1100	929000463503	929000484803
EMEA/Asia	Lexel LED DLM 1100/2000	929000666103	929000484803

THERMAL MANAGEMENT SOLUTIONS

Region	Description	Nuventix Heat Sink Part Number	Nuventix Synjet Cooler Part Number	Nuventix Wire Harness
Worldwide	Lexel LED DLM 1100 - T _{amb} 40°C	HSSLS-CALBL-005	SSSLS-CM012-017	WALLS-C4600-001
EMEA/Asia	Lexel LED DLM 2000 - T _{amb} 40°C	HSSLS-CALBL-003	SSSLS-CM012-017	WALLS-C4600-001

OPTICAL SOLUTIONS - REFLECTORS

Description	Alux-Luxar Aluminum Square		Alux-Luxar Aluminum Round	
	Specular 2x35	Diffuse 2x32	Specular 2x35	Diffuse 2x20
Lexel LED DLM Reflectors	FLC 100	FLC 200	FLC 600	FLC 700

OPTIONAL SYSTEM COMPONENTS

Region	Description	Part Number
EMEA/Asia	UID 8510 ToBeTouched IR	913700335203
	UID 8530 ToBeTouched CT DMX	913700335403
	UID 8520 ToBeTouched DIM DALI (90-260V)	913700335303
	UID 8540 ToBeTouched Color DMX	913700335503
	UIA 8550 ToBeTouched PSU	913700338603

Lexel Spotlight Module

(AVAILABLE FOR EMEA & ASIA ONLY)



LED LIGHT MODULES

Region	Description	Initial Lumens	CRI	CCT (K)	System Input Power (W)	System Efficacy (Lm/W)	Input Voltage (V)	Module B50 L70 (Hours) T case max 65 C°	Part Number
EMEA/Asia	LEXEL LED SLM module 1100 2700-4500K	1100	>80	2700-4500	22	52 @ 4000K	120-277	50K	929000620203
	LEXEL LED SLM module 800 RGB	800	<40	RGB	25	45 @ 6500K	120-277	50K	929000620303

POWER SOLUTIONS

Region	Description	Input Voltage	Dimming	Wattage	Part Number
EMEA/Asia	LEXEL LED Driver	120-277	DALI	25W	929000620503
	LEXEL LED Driver	120-277	DMX	25W	929000632703
	LEXEL LED Driver	120-277	4B*	25W	929000632803
	LEXEL LED Driver	120-277	DALI TW	25W	929000659703

* 4B = four button

CONNECTOR SOLUTIONS

Region	Description	Part Number	
		250mm	600mm
EMEA/Asia	LEXEL LED SLM CABLE	929000620403	929000633203
	LEXEL LED SLM CABLE DMX FL	N/A	929000661303

THERMAL MANAGEMENT SOLUTIONS

Region	Description	Nuventix Heat Sink Part Number	Nuventix SynJet Cooler Part Number	Nuventix Wire Harness
EMEA/Asia	LEXEL LED SLM 800/1100 - T _{amb} 40°C	HSLCS-CALBL-012	SSLCS-CM012-002	WALLS-C4600-001

OPTICAL SOLUTIONS - REFLECTORS

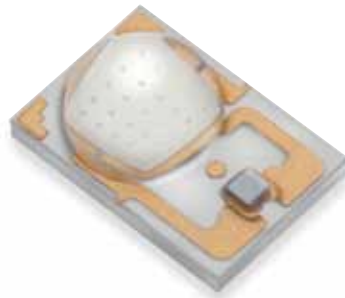
Region	Description	Alux-Luxar Round Spun (Post-Anodized) Reflectors			
		Specular 2x14°	Specular 2x20°	Specular 2x10°	Specular 2x19°
EMEA/Asia	LEXEL LED SLM 800/1100	FLC 1300*	FLC 1600	FLC 1900	FLC 2500
		Alux-Luxar Round Segmented (Pre-Anodized) Reflectors			
		Diffuse 2x13.5°	Diffuse 2x18.5°	Diffuse 2x11°	Diffuse 2x18°
		FLC 1400*	FLC 1700	FLC 2000	FLC 2600
		Alux-Luxar Square Segmented (Pre-Anodized) Reflectors			
		Diffuse 2x25.5°	Diffuse 2x31.5°	Diffuse 2x24°	Diffuse 2x35.5°
		FLC 1500	FLC 1800	FLC 2400	FLC 2700

* Mechanically compatible with Nuventix heat sinks.

REMOTE PHOSPHOR TECHNOLOGY

LEDs & LED LIGHT ENGINES

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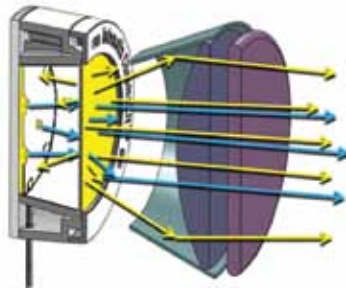
REMOTE PHOSPHOR

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MIXING CHAMBER

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Remote Phosphor Technology

Remote phosphor technology is another approach you can take in creating your LED lighting application. The technology of remote phosphor light source element is achieved by bonding phosphor to a substrate, instead of incorporating it into the LED die package. Combining the remote phosphor plate with Royal Blue LEDs, and a mixing chamber, white light can be achieved with no visible point sources. This approach provides a low glare system capable of higher system efficiency, increased reliability and less color shift over time.

In the next few pages, you will find further details on the various components needed to form your remote phosphor solution, including:

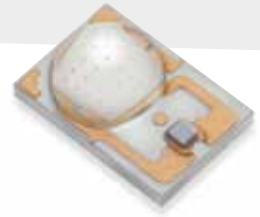
- Royal Blue LEDs
- Remote phosphor light source element
- Mixing chamber
- Optical solutions (see page 32)
- Thermal solutions (see page 50)
- Power solutions (see page 34)



For more information, visit www.FutureLightingSolutions.com/remotephosphor



LEDs & LED Light Engines



LEDs

Supplier	Color	Part Number	Wavelength Range (nm)	Min Flux (lumens or mW)	Typ Flux (lumens or mW)	Test Forward Current (mA)	Maximum Ratings	Radiant Efficacy (%)	
Philips Lumileds	Royal Blue	LXML-PR01-0425	440 - 460	425	480	350	DC Forward Current: 1000mA	37%	
		LXML-PR01-0500	440 - 460	500	520			40%	
			440 - 460	800	890			42%	
			LXML-PR02-A900	440 - 460	900	940	700	LED Junction Temperature: 150°C	44%
			440 - 460	1000	1030	49%			
			440 - 460	1100	1120	53%			

LED LIGHT ENGINES

Supplier	Dimensions (mm)	LEDs	Flux Output @ 350mA (mW)	Flux Output @ 700mA (mW)	Wavelength Range (nm)	Connection	Part Number
General Luminaire	70 x 70	6	3095	5675	440 - 460	20cm Leads	GLV91S70701/20-LG0600NA

Note: This light engine is suitable for 1000 lumens downlight applications. For more details on other LED light engine solutions, contact your local representative.

Remote Phosphor

ChromaLit leverages a phosphor composite precisely layered onto a substrate, separated from the Royal Blue LED energy source. The independent phosphor emits light when excited by Royal Blue light. Because the phosphor has been separated from the energy source and can now be made in any shape and any color, unidirectional light, hot spots, inconsistency and design limitations are no longer SSL challenges.

The ChromaLit family offers several standard options in optimal shapes for a wide range of lighting applications. Below are some of the standard product offerings we currently stock. Please contact a local representative for more details concerning the other offerings not listed below.



CHROMALIT ROUND

Supplier	Part Number	Example Application	Typical lumen output (lm)	Diameter (mm)	Diameter (in)	CCT (K)	CRI	lm/Wrad			
Intematix	CL-830-R23-PC	Single LED	110-200	22.5	0.9	3000	80	200			
	CL-840-R23-PC			22.5	0.9	4000	80	210			
	CL-830-SR-PC			440-800	45	1.8	3000	80	200		
	CL-840-SR-PC				45	1.8	4000	80	210		
	CL-927-LR-PC	Downlight	730-1300	61.5	2.4	2700	90	160			
	CL-830-LR-PC					3000	80	200			
	CL-930-LR-PC					3000	90	165			
	CL-835-LR-PC					3500	80	205			
	CL-840-LR-PC					4000	80	210			
	CL-750-LR-PC					5000	70	230			
	CL-830-R75-PC					1100-2000	75	3	3000	80	200
	CL-840-R75-PC								4000	80	210
	CL-750-R75-PC	5000	70	230							
	CL-830-R100-PC	2200-4000	100.0	3.9	3000				80	200	
	CL-840-R100-PC				4000	80	210				

CHROMALIT LINEAR

Supplier	Part Number	Example Application	Typical lumen output (lm)	Diameter (mm)	Diameter (in)	CCT (K)	CRI	lm/Wrad
Intematix	CL-830-L225-PC	Task	950-2400	305.0 x 22.5	12.0 x 0.9	3000	80	200
	CL-840-L225-PC					4000	80	210
	CL-750-L225-PC					5000	70	230
	CL-830-L125-PC	Panel Lighting	950-1400	305.0 x 12.5	12.0 x 0.5	3000	80	200
	CL-840-L125-PC					4000	80	210
	CL-750-L125-PC					5000	70	230

CHROMALIT SQUARE

Supplier	Part Number	Example Application	Typical lumen output (lm)	Diameter (mm)	Diameter (in)	CCT (K)	CRI	lm/Wrad
Intematix	CL-830-S21-PC	Single LED	110-220	21.0 x 21.0	0.8 x 0.8	3000	80	200
	CL-840-S21-PC					4000	80	210
	CL-830-S55-PC	Downlight	730-1300	55.0 x 55.0	2.2 x 2.2	3000	80	200
	CL-840-S55-PC					4000	80	210
	CL-830-S65-PC					3000	80	200
	CL-840-S65-PC					4000	80	210
	CL-830-S95-PC	2200-4000	95.0 x 95.0	3.7 x 3.7	3000	80	200	
	CL-840-S95-PC				4000	80	210	

CHROMALIT PANEL

Supplier	Part Number	Example Application	Typical lumen output (lm)	Diameter (mm)	Diameter (in)	CCT (K)	CRI	lm/Wrad
Intematix	CL-827-P215-PC	Custom	15000-27500	305.0 x 215.0	12.0 x 8.5	2700	80	180
	CL-830-P215-PC					3000	80	200
	CL-840-P215-PC					4000	80	210

Remote Phosphor *(continued)*



CHROMALIT CANDLE PRODUCT FAMILY

Supplier	Part Number	Example Application	Typical lumen output (lm)	Max. Diameter (mm)	Height (mm)	CCT(K)	CRI	lm/Wrad
Intematix	CL-827-CAN15-PC	LED Retrofit Lamp	70-150	11.9	16.0	2700	80	165
	CL-927-CAN15-PC					2700	90	140
	CL-830-CAN15-PC					3000	80	185
	CL-750-CAN15-PC					5000	70	220
	CL-827-CAN30-PC	Lantern	150-300	16.9	24.2	2700	80	165
	CL-927-CAN30-PC					2700	90	140
	CL-830-CAN30-PC					3000	80	185
	CL-750-CAN30-PC	Chandelier	300-700	26.6	35.00	5000	70	220
	CL-827-CAN40-PC					2700	80	165
	CL-927-CAN40-PC					2700	90	140
	CL-830-CAN40-PC					3000	80	185
	CL-750-CAN40-PC						5000	70

CHROMALIT ELLIPSE PRODUCT FAMILY

Supplier	Part Number	Example Application	Typical lumen output (lm)	Max. Diameter (mm)	Height (mm)	CCT(K)	CRI	lm/Wrad
Intematix	CL-827-ELP30-PC	LED Retrofit Lamp	200-350	17.2	26.4	2700	80	165
	CL-927-ELP30-PC					2700	90	140
	CL-830-ELP30-PC					3000	80	185
	CL-750-ELP30-PC					5000	70	220
	CL-827-ELP40-PC	Pathway	350-600	22.8	32.9	2700	80	165
	CL-927-ELP40-PC					2700	90	140
	CL-830-ELP40-PC					3000	80	185
	CL-750-ELP40-PC	Landscape Lighting	550-850	26.3	40.4	5000	70	220
	CL-827-ELP60-PC					2700	80	165
	CL-927-ELP60-PC					2700	90	140
	CL-830-ELP60-PC					3000	80	185
	CL-750-ELP60-PC						5000	70

CHROMALIT DOME PRODUCT FAMILY

Supplier	Part Number	Example Application	Typical lumen output (lm)	Max. Diameter (mm)	Height (mm)	CCT(K)	CRI	lm/Wrad	
Intematix	CL-827-DOM15-PC	Miniature lamps	100-200	14	13.8	2700	80	165	
	CL-927-DOM15-PC	Landscape lighting				2700	90	140	
	CL-830-DOM15-PC	Single LED				3000	80	185	
	CL-750-DOM15-PC					5000	70	220	
	CL-827-DOM40-PC	LED Retrofit Lamp	300-600	33	20.5	2700	80	165	
	CL-927-DOM40-PC					2700	90	140	
	CL-830-DOM40-PC					3000	80	185	
	CL-750-DOM40-PC					5000	70	220	
	CL-827-DOM60-PC	Pendants	600-1000	42	26.1	2700	80	165	
	CL-927-DOM60-PC					2700	90	140	
	CL-830-DOM60-PC					3000	80	185	
	CL-750-DOM60-PC	Wall Sconce	1000-1600	55	34.1	5000	70	220	
	CL-827-DOM100-PC					2700	80	165	
	CL-927-DOM100-PC					2700	90	140	
	CL-830-DOM100-PC					3000	80	185	
	CL-750-DOM100-PC						5000	70	220



CHROMALIT XT ROUND PRODUCT FAMILY

Supplier	Part Number	Example Application	Typical lumen output (lm)	Max. Diameter (mm)	Diameter (in)	CCT(K)	CRI	lm/Wrad				
Intematix	CL-827-R23-XT		400	22.5	0.9	2700	80	180				
	CL-927-R23-XT					2700	90	160				
	CL-830-R23-XT					3000	80	200				
	CL-930-R23-XT					3000	90	165				
	CL-835-R23-XT					3500	80	205				
	CL-840-R23-XT					4000	80	210				
	CL-750-R23-XT					5000	70	230				
	CL-827-R34-XT					2700	80	180				
	CL-927-R34-XT					2700	90	160				
	CL-830-R34-XT					3000	80	200				
	CL-930-R34-XT					3000	90	165				
	CL-835-R34-XT					3500	80	205				
	CL-840-R34-XT					4000	80	210				
	CL-750-R34-XT					5000	70	230				
	CL-827-R45-XT					Spot	1500	45	1.8	2700	80	180
	CL-927-R45-XT		2700	90	160							
	CL-830-R45-XT	Flood	3000	80	200							
	CL-930-R45-XT	Downlight	3000	90	165							
	CL-835-R45-XT		3500	80	205							
	CL-840-R45-XT	Area lighting	4000	80	210							
	CL-750-R45-XT		5000	70	230							
	CL-827-R62-XT		3000	62	2.4	2700				80	180	
	CL-927-R62-XT					2700				90	160	
	CL-830-R62-XT					3000				80	200	
	CL-930-R62-XT					3000				90	165	
	CL-835-R62-XT					3500				80	205	
	CL-840-R62-XT					4000				80	210	
	CL-750-R62-XT					5000				70	230	
	CL-827-R100-XT									8000	100	3.9
	CL-830-R100-XT						3000	80	200			
CL-930-R100-XT	3000						90	165				
CL-835-R100-XT	3500						80	205				
CL-840-R100-XT	4000						80	210				
CL-750-R100-XT	5000						70	230				

Remote Phosphor *(continued)*

CHROMALIT XT SQUARE PRODUCT FAMILY

Supplier	Part Number	Example Application	Typical lumen output (lm)	Max. Dimension (mm)	Dimension (in)	CCT(K)	CRI	lm/Wrad
Intematix	CL-827-S65-XT	Downlight Area lighting	3000	65 x 65	2.6 x 2.6	2700	80	180
	CL-927-S65-XT					2700	90	160
	CL-830-S65-XT					3000	80	200
	CL-930-S65-XT					3000	90	165
	CL-835-S65-XT					3500	80	205
	CL-840-S65-XT					4000	80	210
	CL-750-S65-XT					5000	70	230
	CL-827-S95-XT		7000	95 x 95	3.7 x 3.7	2700	80	180
	CL-927-S95-XT					2700	90	160
	CL-830-S95-XT					3000	80	200
	CL-930-S95-XT					3000	90	165
	CL-835-S95-XT					3500	80	205
	CL-840-S95-XT					4000	80	210
	CL-750-S95-XT					5000	70	230

CHROMALIT XT LINEAR PRODUCT FAMILY

Supplier	Part Number	Example Application	Typical lumen output (lm)	Max. Dimension (mm)	Dimension (in)	CCT(K)	CRI	lm/Wrad
Intematix	CL-830-L152-XT	Task	4000	152.5 x 22.5	6.0 x 0.9	3000	80	200
	CL-835-L152-XT	Linear				3500	80	205
	CL-840-L152-XT	Panel Lighting				4000	80	210

Mixing Chamber

The mixing chamber is a critical component along with the high output blue LED excitation source and high conversion efficiency ChromaLit remote phosphor. With a properly designed mixing chamber, light sources with extremely high luminous efficacy, low glare, and uniform light output are possible. With a properly designed mixing chamber and high wall plug efficiency LED, efficacy improvements of 30% over white LED systems can be achieved.

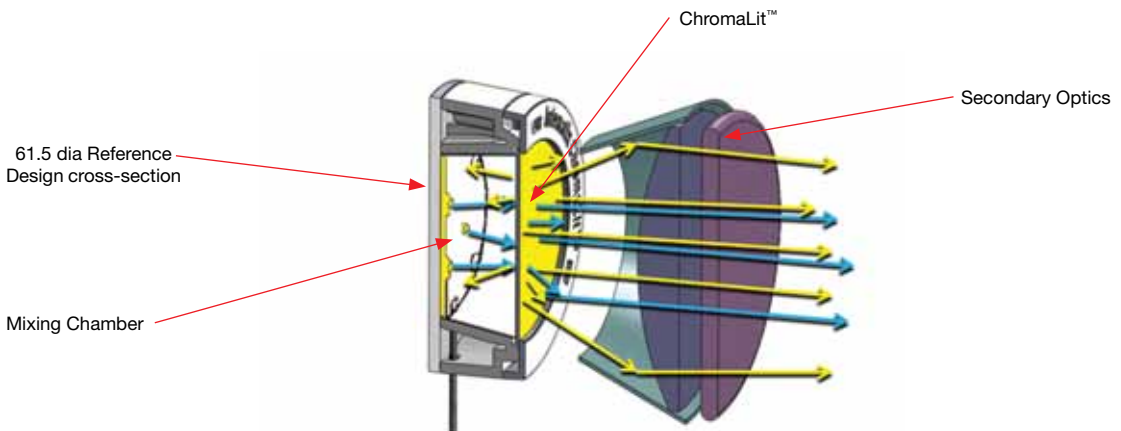
BASIC THEORY OF MIXING CHAMBER OPERATION

Standard white LED light source systems require diffuse optics to properly distribute the light from the individual LEDs. Typical losses due to the diffuse optics are 8-10% or higher depending on the uniformity requirement. The alternative system approach is a blue LED pump which illuminates a phosphor source (ChromaLit) that is remote from the LED die. The blue LED and remote phosphor approach provides a low glare system capable of up to 30% higher luminous efficacy.


The mixing chamber in a blue LED system with remote phosphor requires a broad spectrum high reflectivity material between the blue LED(s) and the remote phosphor source. With this configuration, the color and spatial mixing of the light is optimized. The output beam is then exceptionally uniform with regard to color and brightness across the exit aperture of the remote phosphor.

A diffuse reflectance material as opposed to specular is recommended so that a uniform Lambertian distribution is obtained. Use of any specular reflector material is not recommended in the mixing chamber since most specular materials will have significantly lower reflectivity. Furthermore, since the down converted rays directed back into the mixing chamber are highly diffuse already, a specular reflector will simply create a return of diffuse rays. The distance between the LED and remote phosphor is also less sensitive when using a diffuse material that creates additional ray bounces before exiting the remote phosphor.

LED RAYS – BLUE, DOWN CONVERTED RAYS - YELLOW



LED ray – blue, down converted rays - yellow

 For additional information, refer to the mixing chamber design guide on our website. www.FutureLightingSolutions.com/remotephosphor

Glossary

Ampere (A)	The unit of measurement of current.
AC-DC	See <i>Offline AC-DC</i> .
Beam Angle	See <i>Viewing Angle</i> .
Boost Circuit	An electrical drive circuit in which the required <i>Output Voltage</i> is greater than the <i>Input Voltage</i> .
Buck / Boost Circuit	An electrical drive circuit in which the required <i>Output Voltage</i> is at times less than and at times greater than the <i>Input Voltage</i> . Such a drive circuit is typically required when the LED is powered using batteries, as the battery voltage is depleted over time.
Buck Circuit	An electrical drive circuit in which the required <i>Output Voltage</i> is less than the <i>Input Voltage</i> .
Candela (cd)	A unit of measurement of <i>Luminous Intensity</i> , equal to the amount of light given out through a solid angle, that is to say lumens per steradian. (There are 4 pi steradians in a complete sphere. The number of steradians in a given solid angle can be determined by dividing the surface area of that portion of the sphere by the square of the radius of the sphere.)
Collimator	A <i>Secondary Optic</i> , often a <i>Lens</i> , which collimates the light.
Color Temperature	The measurement of color of white light, typically measured in Kelvin (K). The more reddish the light, the lower the color temperature; the more bluish the light, the higher the color temperature.
CRI	A measure that defines how well colors are rendered by different light sources in comparison to a standard (reference) light source. CRI varies from 0 to 100.
Dominant Wavelength	The <i>Wavelength</i> of light, as perceived by the human eye.
Drive Current	The constant current provided to the LED by the <i>Driver</i> .
Driver	A circuit that provides current to the LED. Constant current drivers are suitable for LUXEON LEDs.
Electrical Module	A ready-to-use power solution, ideal for testing and prototyping the LEDs. Little to no electronics knowledge is required.
Forward Voltage (V_f)	The typical voltage drop across the LED, as measured at a junction temperature of 25°C. Depending on the product, the maximum forward voltage is between 15 and 25% greater than the typical forward voltage.
Full Width Half Maximum (FWHM)	The total beam divergence at 50% of its maximum intensity.
Heat Sink	A component designed to lower the temperature of the electronic device to which it is connected by dissipating excess heat generated. It is often finned, and made from aluminum.
Hot/Cold Factor	The ratio of light output at a higher junction temperature (e.g. 100°C) to the light output at a junction temperature of 25°C.
Input Voltage (V_{IN})	The voltage applied to the driver circuit.
Integrated Circuit (IC)	An electronic circuit built on a semiconductor silicon substrate. The circuit is sealed, and has leads. It is often referred to as a “chip.”
JEDEC	Joint Electron Devices Engineering Council (JEDEC) is the global leader in developing open standards for the microelectronics industry.
Junction Temperature	The temperature of the p-n junction within the semiconductor die.
Light Engine	A light engine consists of single or multiple LEDs mounted on a printed circuit board (PCB) in a variety of configurations.

Low-Dropout Regulator (LDO)	An electrical drive circuit in which the required <i>Output Voltage</i> is slightly lower than the <i>Input Voltage</i> .
Lens	A <i>Secondary Optic</i> that collimates the light. For white LEDs the beam angle can be 10, 30 or 45 degrees.
Lumen (lm)	The unit of measurement of <i>Luminous Flux</i> .
Lumen Maintenance	The number of hours after which the light output will be at 70% of the original light output.
Luminous Flux	A measure of the perceived power of light adjusted to reflect the varying sensitivity of the human eye to different colors, measured in <i>Lumens</i> .
Luminous Intensity (or Intensity)	The energy emitted by a light source in a given direction. The unit of measurement is the <i>Candela</i> .
milliWatt (mW)	One thousandth of a Watt. This is a measurement of power. It can be used to measure <i>Power Consumption</i> but is typically used to measure <i>Radiometric Power</i> .
Offline AC-DC	An electrical drive circuit that converts from wall current and voltage to a constant DC current, suitable for driving all LUXEON LEDs.
Optic	see <i>Secondary Optic</i> .
Output Current (I_{OUT})	The current supplied to the LED from the output of the driver. It is measured in <i>Amperes</i> .
Output Voltage (V_{OUT})	The voltage available to the LED from the output of the driver.
Power Consumption	A measure of the power consumed by the system. It can be calculated by multiplying the <i>Forward Voltage</i> by the <i>Drive Current</i> . The unit of measurement is the <i>Watt</i> .
Programmable IC	An <i>Integrated Circuit</i> that can be used to modulate the <i>Output Current</i> .
Radiant Power	see <i>Radiometric Power</i> .
Radiation Pattern	The polar pattern describing the directional characteristics of light exiting the LED.
Radiometric Power	A measure of the power of the light exiting the LED. The unit of measurement is the <i>milliWatt</i> .
Reflector	A <i>Secondary Optic</i> that reflects the light exiting the side of the LED.
Secondary Optic	A device connected to the LED for purposes of manipulating the light output. Common secondary optics include a <i>Lens</i> and a <i>Reflector</i> .
SEPIC Circuit	(Single Ended Primary Inductor Converter) These are useful for replacing boost circuits when true shutdown is required; $V_{OUT} = \phi V$.
Side Emitting	A <i>Radiation Pattern</i> in which the peak luminous intensity occurs at 85 degrees from the normal.
Solid-state Lighting (SSL)	Lighting that uses solid-state devices, that is to say, high power LEDs, such as the LUXEON.
Thermal Resistance	The measurement of how difficult it is for heat to traverse an object. It is defined as the temperature difference across an object when a unit of heat energy flows through it in unit time. The lower the thermal resistance, the better the object <i>heat sink</i> is at dissipating heat. The unit of measurement is degrees Celsius per Watt ($^{\circ}\text{C}/\text{W}$).
Viewing Angle	The angle through which the light may be satisfactorily viewed. Note: as the viewing angle decreases, the intensity generally increases.
Volt (V)	The unit of measurement of voltage.
Watt (W)	The unit of measurement of power. One <i>Watt</i> is one <i>Ampere</i> of current flowing at one <i>Volt</i> .
Wavelength	The distance between two peaks of a repeating wave. For light, the wavelength is used as a measurement of color. Visible light ranges between 400 and 700 nanometres (nm) in wavelength.

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