

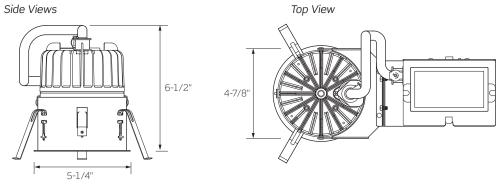
# **R4RM KB SERIES** | 4-Inch Round Remodel Housing with BIOS SkyBlue™ Technology



Ceiling Opening: 4-7/8"
Ceiling Thickness: 1/2" - 5/8"

## DISCONTINUED ITEM LIMITED INVENTORY

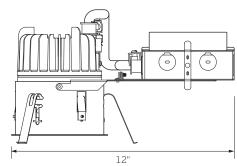
Consult factory for availability











	R4RM1	R4RM2	R4RM3	R4RM4	R4RM5	
WATTAGE	12W	15W	21W	30W	39W	
LUMEN OUTPUT <sup>1</sup>	700Lm	900Lm	1300Lm	1800Lm	2200Lm	
COLOR TEMPERATURE / CRI / R9	3000K / 81 CRI / 90 R9					
	3500K / 83 CRI / 95	R9				
<u></u>	4000K / 83 CRI / 95	R9				
INPUT WATTAGE	12W	16W	21W	30W	38W	
NPUT CURRENT (A) 120V/277V/347V	.08/.04/.03	.12/.06/.04	.17/.08/.06	.23/.11/.08	.31/.14/.11	
INPUT VOLTAGE						
Standard Driver	120VAC/277VAC/3	47VAC, 50/60Hz				
Lutron Eco-System® Driver	120VAC/277VAC, 50	120VAC / 277VAC , 50/60Hz				
eldoLED ECOdrive / SOLOdrive	120VAC/277VAC, 50	120VAC / 277VAC , 50/60Hz				
DRIVER POWER FACTOR	> 0.90	> 0.90				
TOTAL HARMONIC DISTORTION (THD)	< 20%					
LISTINGS	cCSAus Certified to UL Standards; Suitable for Damp Locations					
WARRANTY	Five (5) year replacement after date of purchase					
SYSTEM RATING	50,000 Hours @ 70% Lumen Maintenance					

<sup>1.</sup> Approximate lumen output based on 3000K performance; see photometric test results for additional information



## R4RM KB SERIES | 4-Inch Round Remodel Housing with BIOS SkyBlue™ Technology

#### ORDERING INFORMATION

Housing/LED Series	Color Temp	Electrical	Dimming	BIOS Protocol
R4NC1 12W/ 700lm R4NC2 15W/ 900lm R4NC3 21W/1300lm R4NC4 30W/1800lm R4NC5 39W/2200lm	30KB 3000K 35KB 3500K 40KB 4000K	12 120V 27 277V 34 <sup>1</sup> 347V	D <sup>2</sup> Forward/Reverse Phase/0-10V Dimming D2 <sup>1</sup> 347V 0-10V Dimming D4 <sup>3</sup> Lutron Hi-lume 1% EcoSystem Driver with Soft-on, Fade-to-Black D6 <sup>4</sup> eldoLED ECOdrive, 0-10V, 1% Dimming D7 <sup>4</sup> eldoLED ECOdrive, DALI, 1% Dimming D8 <sup>4</sup> eldoLED SOLOdrive, 0-10V, 0.1% Dimming D9 <sup>4</sup> eldoLED SOLOdrive, DALI, 0.1% Dimming DMX <sup>4,5</sup> eldoLED POWERdrive, DMX 0.0% Dimming	BT BIOS Tunable Dimming BS BIOS Static Dimming

- 1. D2 0-10V Dimming option only available for 347V option (34)
- 2. Forward/Reverse Phase Dimming for 120V only
- 3. Lutron Eco-System is available for both 120V and 277V; Lutron Dimming options are available for Series 1 through 4 only (12W through 30W); not available for use with LED Series 5 (39W).
- 4. eldoLED Drivers are programmed for Linear Curve Dimming as standard; for Logarithmic Curve Dimming, consult factory
- 5. Verify DMX Driver and Control System compatibility with factory prior to ordering

See "Trims for 4-Inch LED Downlights" Specification Sheet for compatible Trim information and details

#### **PRODUCT SPECIFICATIONS**

#### CONSTRUCTION

- Specification Grade 4-inch Round 16 Gauge Galvanized Steel Remodel Housing with Die-Cast Aluminum Heat Sink
- 5-1/4-inch O.D. Plaster Ring Flange
- Heavy Duty Steel Plaster Ring is secured to ceiling by three (3) Spring Clamps
- Quick-connect Light Engine
- LED Drivers are fully accessible from below the ceiling and can be easily removed
- Pre-wired Junction Box with Screwdriver Pry-outs and four (4) 1/2-inch Knockouts
- Output over-voltage, over-current and short circuit protection
- Approved for Through Circuit Wiring: max. eight (8) 12 AWG (4in/4out), wiring rated to 90°C
- Requires minimum 3-inch clearance around Housing from insulation material; thermal protection provided in case of improper insulation use

#### PERFORMANCE SUMMARY

 All R4 Downlights are available for non-dimming and dimming applications; for compatible Dimmers, refer to the Dimming Specification Sheet

Example Order: R4RM235KB12DBT

- Specification Grade Flanged Trims available in several different styles and finishes
- Trimless options cannot be used on Remodel Style Housings
- UL8750 and Class 2 Compliant; RoHS Compliant, US only



## R4RM KB SERIES | 4-Inch Round Remodel Housing with BIOS SkyBlue™ Technology

#### **BIOS SKYBLUE LED TECHNOLOGY**

- BIOS SkyBlue™ Circadian Lighting Technology brings the benefits of blue skies inside by emulating the makeup of nature's light spectrum
- Light sends signals to the body that create biological responses, many associated with the body's circadian system
- These responses impact mood, hormone production, energy levels, alertness, fatigue and more
- This biological response to light can be measured by the melanopic (non-visual) to photopic (visible) ratio called the M/P ratio: during the day, a high M/P ratio is optimal, while at night a low M/P ratio is best
- BIOS LEDs provide high daytime stimulus by pin-pointing the peak sensitivity of the "sky blue" visible light spectrum wavelengths, approximately 490nm, needed to effectively communicate and trigger circadian response

		MELANOPIC I	RATIO (M/P) <sup>1</sup>	
CCT	CRI	R9	DAY	NIGHT <sup>2</sup>
3000K	81	90	0.74	0.47
3500K	83	95	0.83	0.47
4000K	83	95	0.92	0.47

- 1. The Melanopic Ratios (M/P) provided have been calculated using the WELL v2 Methodology
- 2. 2700K CCT with SkyBlue (490nm) removed during Nighttime. Available only for Tunable BioDimming™, not available for Static BioDimming™

#### BIOS BIO-DIMMING™

The BIOS Bio-Dimming Modules deliver a completely customizable and spectrally-modulated light source. Two Modules are available, Tunable or Static, depending on desired performance, and can be used with any standard dimming interface.

**Tunable Bio-Dimming™** is best suited for 24-hour facilities or evening applications, where full light output is desired as the day progresses, but also there is also the need to minimize circadian impact in the evening.

When dimming, the sky blue wavelengths are removed first, resulting in a modest color temperature shift to 2700K.

This occurs within the first 20% of the dimming profile, the remainder of the dimming profile reduces light output, providing a standard linear reduction of the sky blue depleted spectrum.

TUNABLE BIO-DIMMING PROTOCOL				
DIMMER LEVEL	ССТ	SKYBLUE %	LIGHT OUTPUT	
100%	Initial CCT 3000K/3500K/4000K	100%	100%	
99% - 81%	Gradual Shift down to 2700K	100% - 0%	100%	
80%	2700K	<b>0%</b> No SkyBlue Wavelengths	100%	
79% - 0%	2700K	<b>0%</b> No SkyBlue Wavelengths	Linear Dimming	

Static Bio-Dimming™ supports proper daytime circadian stimulus, best suited for day-only applications.

A steady, invisible, sky blue signal boost to white light is delivered throughout the day for high daytime circadian stimulus.

When dimming, these sky blue wavelengths remain as overall light intensity is dimmed down.

STATIC BIO-DIMMING PROTOCOL				
DIMMER LEVEL	ССТ	SKYBLUE %	LIGHT OUTPUT	
100%	Initial CCT 3000K/3500K/4000K	100%	100%	
99% - 0%	Initial CCT 3000K/3500K/4000K	100%	Linear Dimming	



### R4 SERIES | Trims for 4-Inch Downlights with BIOS SkyBlue™ Technology

#### TRIMMED OPTIONS



C4321-WHT-PL

#### C4321 Series: Cone Series

#### Two Piece Reflector with Lower Cone



Wet Locations

- 3-7/8-Inch ID, 5-11/16-Inch OD, 3-1/8-Inch Height
- Two Piece Reflector: Upper Reflector with Lower Cone
- Includes one (1) LF20-CL Clear Glass Lens
- Suitable for Approved for Wet Locations when Glass Lens is installed

#### Trim

C4321-CLR-CLR Clear Reflector/Clear Lower Cone C4321-CLR-PL Clear Reflector/Platinum Lower Cone C4321-WHT-CLR White Reflector/Clear Lower Cone C4321-WHT-PL White Reflector/Platinum Lower Cone



C4327-CLR-PL

#### C4321 Series: Cone Series

#### Two Piece Reflector with Lower Cone and Prismatic Convex Lens



- 3-7/8-Inch ID, 5-11/16-Inch OD, 3-1/8-Inch Height
- Two Piece Reflector: Upper Reflector with Lower Cone and Prismatic Convex Lens

- Suitable for Lens has 1-1/2-inch regress
- Wet Locations

   Approved for Wet Locations

#### Trim

C4327-CLR-CLR	Clear Reflector/Clear Lower Cone
C4327-CLR-PL	Clear Reflector/Platinum Lower Cone
C4327-WHT-CLR	White Reflector/Clear Lower Cone
C4327-WHT-PL	White Reflector/Platinum Lower Cone



C4321-WHT-B

#### C4321 Series: Baffle Series

#### Two Piece Reflector with Lower Baffle



- 3-7/8-Inch ID, 5-11/16-Inch OD, 3-1/8-Inch Height
- Two Piece Reflector: Upper Reflector with Lower Baffle
- Includes one (1) LF20-CL Clear Glass Lens

Wet Locations

• Approved for Wet Locations when Glass Lens is installed

#### Trim

C4321-CLR-B	Clear Reflector/Black Lower Baffle
C4321-CLR-P	Clear Reflector/White Lower Baffle
C4321-WHT-B	White Reflector/Black Lower Baffle
C4321-WHT-P	White Reflector/White Lower Baffle



#### C4327 Series: Baffle Series

#### Two Piece Reflector with Lower Baffle and Prismatic Convex Lens



- 3-7/8-Inch ID, 5-11/16-Inch OD, 3-1/8-Inch Height
- Two Piece Reflector: Upper Reflector with Lower Baffle and Regressed Prismatic Convex Lens
- Lens has 1-1/2-inch regress
- Wet Locations

   Approved for Wet Locations

#### Trim

Clear Reflector/Black Lower Baffle
Clear Reflector/White Lower Baffle
White Reflector/Black Lower Baffle
White Reflector/White Lower Baffle



### R4 SERIES | Trims for 4-Inch Downlights with BIOS SkyBlue™ Technology

#### TRIMMED OPTIONS



#### C4322 Series: Specification Grade Reflector



- 4-3/8-Inch ID, 5-11/16-Inch OD, 3-1/8-Inch Height
- For Wet Location approved trim, add "-C" for Clear Lens or "-SL" for Sandblast Lens after finish code

Suitable for Wet Locations with Lens

 White Painted Flange available for -CLR and -PL finish trims; add "-WPF" to the end of the part number

#### Trim

C4322N-CLR¹ 35° Narrow Beam Clear Specular Reflector
C4322M-CLR¹ 51° Medium Beam Clear Specular Reflector
C4322W-CLR¹ 80° Wide Beam Clear Specular Reflector

C4322-PL<sup>1</sup> 59° Platinum Reflector
C4322-PLWHE 59° Platinum Wheat Reflector

C4322-WHT 70° White Reflector

1. Finish available with White Panted Flange; add "-WPF" to end of part number



#### C4323 Series: Lensed Wall Wash Reflector

• 4-Inch ID; 5-11/16-Inch OD

#### Trim

C4323-CLR¹ Clear Reflector
C4323-PL¹ Platinum Reflector
C4323-WHT White Reflector

1. Finish available with White Panted Flange; add "-WPF" to end of part number



#### C4322DF Series: ISOWET Dead Front Reflector



- 4-3/8-Inch ID, 5-11/16-Inch OD, 3-1/8-Inch Height
- Isolated, Wet Location approved Thermoplastic Reflector
- Clear Glass Lens deeply regressed inside top of Reflector

Suitable for Wet Locations

#### Trim

C4322DF-SL¹ Satin Silver Painted Dead Front Reflector
C4322DF-WHT Matte White Painted Dead Front Reflector

1. Finish available with White Panted Flange; add "-WPF" to end of part number



#### CTR4325L Series: Reflector with Floating Glass Disc

- 4-3/8-Inch ID, 6-Inch OD, 1-1/4-inch drop from ceiling
- White Reflector with Floating Glass Disc

#### rim

CTR4325L-WHT-P White Reflector with Floating Glass Disc



CTR4326L-CLR-P

#### CTR4326L Series: Reflector with Floating Glass Ring

- 4-3/8-Inch ID, 6-Inch OD, 1-1/4-inch drop from ceiling
- Clear Reflector with Floating Glass Ring
- 3-1/2-inch Center Hole

#### Trim

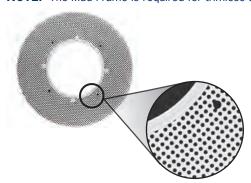
CTR4326L-CLR-P Clear Reflector with Floating Glass Ring



### R4 SERIES | Trims for 4-Inch Downlights with BIOS SkyBlue™ Technology

#### **MUD FRAME**

**NOTE:** The Mud Frame is required for trimless applications



#### **Mud Frame**

- · Die-cast ring with steel mesh frame, painted white
- 10-Inch Outer Diameter
- Required for trimless applications



#### **ROUND TRIMLESS OPTIONS**



#### CN4322 Series

Specification Grade Trimless Reflector



with Lens

- 4-3/8-Inch ID, 4-3/4-Inch OD, 4-3/8-Inch Height
- For Wet Location approved trim, add "-C" for Clear Lens or "-SL" for Sandblast Lens after finish code
- Suitable for Wet Locations with Lens Trim cannot be used on Remodel Housings (R4RM) or with Slope Ceiling Adapters (RSA4L)



#### **CN4323 Series**

Trimless Wall Wash Reflector with Lens

- 4-Inch ID, 4-3/4-Inch OD
- For use with 1/2- to 1-inch ceiling thicknesses only
- Trim cannot be used on Remodel Housings (R4RM) or with Slope Ceiling Adapters (RSA4L)

Trim		Len	s Opitons
	35° Narrow Beam Clear Reflector 51° Medium Beam Clear Reflector		No Lens, Leave Blank
CN4322W-CLR CN4322-PL	80° Wide Beam Clear Reflector 59° Platinum Reflector	C SL	Clear Sandblast
CN4322-WHT	70° White Reflector		

Trim	
CN4323-CLR CN4323-PL CN4323-WHT	Clear Reflector Platinum Reflector White Reflector



## R4 SERIES | 4-In. Downlights with BIOS SkyBlue™ Technology Photometrics

#### R4NC535KB12DBS / C4322M-CLR: 3500K, CLEAR REFLECTOR, MEDIUM BEAM

LM-63 Test No. G21092801: LM-79 Test No. S21093002

Fixture Delivered Lumens: 2240.8 Total Watts@120V: 38.5 Lumens Per Watt: 58.2

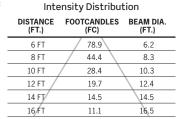
Center Beam Candle Power: 2841 Beam Distribution: 54.7° Spacing Criterion: 0.84

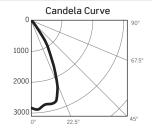
Color Rendering Index (CRI)1: 84.8 Color Temperature (CCT)2: 3241K

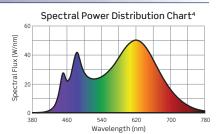
Peak Sensitivity: 490nm

R9 Value: 93.2

Designed for 50,000 Hour Lamp Life<sup>3</sup>







#### R4NC535KB12DBS / C4322W-CLR: 3500K, CLEAR REFLECTOR, WIDE BEAM

LM-63 Test No. G21070602; LM-79 Test No. S21093002

Fixture Delivered Lumens: 2259.6 Total Watts@120V: 38.5 Lumens Per Watt: 58.7 Center Beam Candle Power: 1118 Beam Distribution: 82.0° Spacing Criterion: 1.25

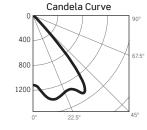
Color Rendering Index (CRI)1: 84.8 Color Temperature (CCT)2: 3241K Peak Sensitivity: 490nm

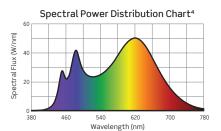
R9 Value: 93.2

Designed for 50,000 Hour Lamp Life<sup>3</sup>

#### Intensity Distribution

DISTANCE (FT.)	FOOTCANDLES (FC)	BEAM DIA. (FT.)
6 FT	31.1	10.4
8 FT	17.5	13.9
10 FT	11.2	17.4
12 FT	7.8	20.9
14 FT	5.7	24.3
16 FT	4.4	27.8





#### R4NC535KB12DBS / C4322-PL: 3500K, PLATINUM REFLECTOR, MEDIUM BEAM

LM-63 Test No. G21070601; LM-79 Test No. S21093002

Fixture Delivered Lumens: 2006.3 Total Watts@120V: 38.5 Lumens Per Watt: 52.1 Center Beam Candle Power: 2371 Beam Distribution: 62.1° Spacing Criterion: 0.92

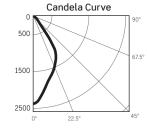
Color Rendering Index (CRI)1: 84.8 Color Temperature (CCT)2: 3241K

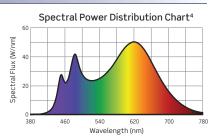
Peak Sensitivity: 490nm R9 Value: 93.2

Designed for 50,000 Hour Lamp Life<sup>3</sup>

#### Intensity Distribution

DISTANCE (FT.)	FOOTCANDLES (FC)	BEAM DIA. (FT.)
6 FT	65.8	7.2
8 FT	37.0	9.6
10 FT	23.7	12.0
12 FT	16.5	14.4
14 FT	12.1	16.8
16/FT	9.3	19.2





1. Accuracy of Rendering Colors 2. Color Appearance of Light Source 3. Dependent on Surrounding Temperatures 4. Colors Present within the Light Source

#### PHOTOMETRIC MULTIPLICATION FACTORS

Lumen output values fluctuate based on Color Temperature, Luminaire Wattage/Output and Trim Selection. To estimate lumen output of the various CCT/CRI options, multiply 3000K (80 CRI min) results by the following:

CCT MULTIPLIERS						
CCT	STANDARD CRI					
3000K	0.95					
3500K	1.00					
4000K	1.05					

OUTPUT MULTIPLIERS								
12W/SERIES 1	15W/SERIES 2	21W/SERIES 3	30W/SERIES 4					
0.31	0.43	0.61	0.81					

TRIM MULTIPLIERS							
C4322-PL	C4322-WHT	C4322DF-SL	C4323-CLR				
0.90	0.92	0.67	0.51				

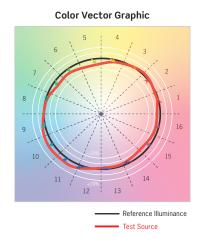


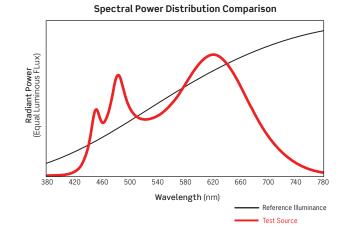
### R4 SERIES | 4-In. Downlights with BIOS SkyBlue™ Technology Photometrics

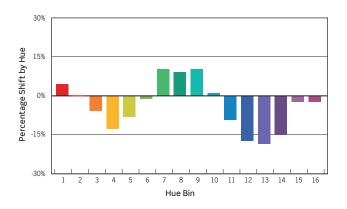
#### TM-30 DATA: R4NC535KB12DBS / C4322M-CLR

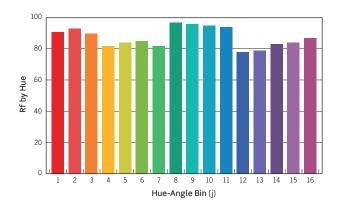
ANSI/IES TM-30-18 Color Rendition Report Test No. S21012801

$R_f$	86
$R_{\rm g}$	96
CCT(K)	3241K
D <sub>uv</sub>	-0.0098
u <sup>I</sup>	0.2468
VI	0.5032









HUE BIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
HUE SHIFT	-4%	0%	- 5%	- 11%	- 7%	- 1%	9%	8%	9%	1%	- 8%	- 15%	- 16%	- 13%	- 2%	- 2%
R <sub>f</sub> VALUE	91	93	90	82	84	85	82	87	86	85	84	78	79	83	84	87

Colors are for visual orientation purposes only



TYPE

## **R4 KB SERIES** | 4-Inch Round Downlights with BIOS SkyBlue™ Technology: Dimming Specifications

CATALOG NO.

			PHASE/0-10V DIMMING (D, D2, or MVD Option*)	eldoLED ECOdrive 0-10V (D6, D8, MVD6, or MVD8 Option)	eldoLED SOLOdrive 0-10V (D7, D9, MVD7, or MVD9 Option)
Manufacturer	Product	Model	Light Output	Light Output	Light Output
Leviton	IllumaTech	IPI06-1LZ	1%-100%	NA	NA
Leviton	SureSlide	6631-2	1%-100%	NA	NA
Leviton	Vizia	VPE06	9%-100%	NA	NA
Leviton	Trimatron	6683-IW	6%-100%	NA	NA
Leviton	Decora	6161	15%-100%	NA	NA
Leviton	SureSlide	6633-P	1%-100%	NA	NA
Leviton	IllumaTech	IPE04	6%-100%	NA	NA
Leviton	IllumaTech	IP710-DLX	NA	1%-100%	0.1%-100%
Cooper	Devine	DLC03P	1%-100%	NA	NA
Cooper	Skye	SLC03P	0%-100%	NA	NA
Cooper	Decorator	DAL06P	0%-100%	NA	NA
Pass & Seymour	Titan	CD4FB-W	NA	1%-100%	0.1%-100%
Synergy		ISD BC	NA	1%-100%	0.1%-100%
Watt Stopper	Miro Decorator	DCLV1	NA	1%-100%	0.1%-100%
Lutron	Ariadni	TGCL-153P	1%-100%	NA	NA
Lutron	Ariadni	TG-600P	13%-100%	NA	NA
Lutron	Diva	DVCL-153P	1%-100%	NA	NA
Lutron	Diva	DV600P	6%-100%	NA	NA
Lutron	Diva	DVELV303P	6%-100%	NA	NA
Lutron	Diva	DVTV	NA	1%-100%	0.1%-100%
Lutron	Faedra	FAELV500	12%-100%	NA	NA
Lutron	Lumea	LG600P	8%-100%	NA	NA
Lutron	Maestro	MAELV600	16%-100%	NA	NA
Lutron	Nova	NFTV	NA	1%-100%	0.1%-100%
Lutron	Nova T	NTFTV	NA	1%-100%	0.1%-100%
Lutron	Skylark	S-603PG	5%-96%	NA	NA
Lutron	Skylark	S600P	5%-100%	NA	NA
Lutron	Skylark	SELV300P	10%-100%	NA	NA
Lutron	Skylark	CT103P	9%-100%	NA	NA

\*277V Phase Dimming is not available

#### PHASE DIMMING

- Incandescent 120V AC Dimmers adjust the light with Forward Phase Control, where the Dimmer "chops" the forward part of the AC Wave to deliver less or more power to the light source. No Neutral Wire Connection required.
- Electronic Low Voltage 120V AC Dimmers adjust the light with Reverse Phase Control, where the Dimmer "chops" the back part of the AC Wave to deliver less or more power to the light source. Neutral Wire Connection required.

#### 0-10V DIMMING

0-10V DC Low Voltage Dimmers operate using two (2) Low Voltage
Dimming Wires that are separate from the 120V or 277V AC Power. The
Dimmer sends a Variable Output Voltage to the luminaire based upon the
dimming level. 10V Corresponds to undimmed operation, 5V to 50% and
so on. Switching On/Off is controlled with the Line Voltage Power Input to
the Dimmer (120V or 277V AC). Dimming operation is controlled with the
0-10V DC Low Voltage Wiring Connection between the Dimmer and the
LED Driver. The Control Signal runs on two (2) low voltage control wires
color coded Violet and Pink/Gray.

#### EcoSystem/ECOdrive DIMMING

- Lutron EcoSystem Drivers provide continuous dimming from 1%-100%. For a complete list of compatible Dimmers and Controls, visit www.lutron.com
- Use DALI approved Controls for dimming eldoLED ECOdrive, 1% Dimming (Dimming Option D7 or MVD7) and eldoLED SOLOdrive, 0.1% Dimming (Dimming Option D9 or MVD9).

#### **NOTES**

- 1. Testing was performed with a single luminaire connected to Dimmer.
- 2. Testing has been performed on these Dimmers, but this does not imply any warranty of compatibility.
- 3. Dimming performance can be influenced by different Loads, as well as variations in Dimmer Switches within the same Model.
- Dimmer Maximum Load Rating with LED may differ from published
   Traditional Source Dimmer Ratings. Consult manufacturer for maximum
   Dimmer information.
- 5. Consult factory for additional dimming information.