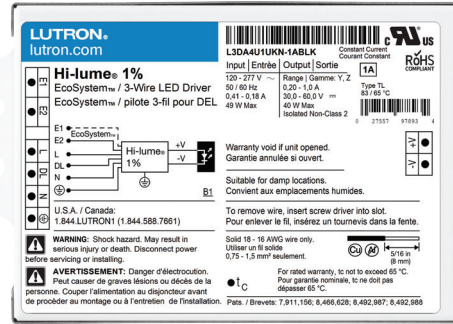


Hi-lume 1% EcoSystem/3-Wire L3D Driver Overview

Hi-lume 1% EcoSystem/3-Wire Driver is a high-performance LED driver that provides smooth, continuous 1% dimming for virtually any LED fixture, whether it requires constant-current or constant-voltage. It is the most versatile LED driver offered today due to its compatibility with a wide variety of LED arrays, multiple form factors, and numerous control options.

Features

- Continuous, flicker-free dimming from 100% to 1%.
- Compatible with Energi Savr Node unit with EcoSystem, GRAFIK Eye QS control unit, PowPak dimming module with EcoSystem, and Quantum systems, allowing for integration into a planned or existing EcoSystem lighting control solution. Please see **Compatible Controls** chart or contact Lutron for details regarding compatible controls.
- Standard 3-wire, line-voltage phase-control technology for consistent dimming performance and compatibility with all Lutron 3-wire fluorescent controls.
- QwikFig compatible. For more information please refer to Lutron P/N 367-2533 (K and M case only).
- Line voltage miswire protection on EcoSystem control inputs.
- 100% performance tested at factory.
- A rated lifetime of 50,000 hours @:
 - $t_c = 149\text{ }^\circ\text{F}$ ($65\text{ }^\circ\text{C}$) for 40 W drivers
 - $t_c = 158\text{ }^\circ\text{F}$ ($70\text{ }^\circ\text{C}$) for 50 W drivers
- UL recognized and listed options for United States and Canada.
- NOM certified option for Mexico.
- Type TL Rated.
- FCC Part 15 Class A
- Pulse Width Modulation (PWM) or Constant-Current Reduction (CCR) dimming methods available. See Application Note #360 for details.
- RoHS Compliant.
- For more information please go to: www.lutron.com/hilume1led



Case type K

3.00 in (76 mm) W x 1.00 in (25 mm) H x 4.90 in (124 mm) L



Case type M

1.18 in (30 mm) W x 1.00 in (25 mm) H x 14.25 in (362 mm) L



Case type KL

K-case mounted on a 4.00 in (102 mm) W x 1.50 in (38 mm) H x 4.00 in (102 mm) L junction box to provide wiring compartment

The Hi-lume 1% EcoSystem/3-Wire family of drivers includes models which operate at a maximum power of 40 W or less as well as models which can operate up to 50 W.

- 40 W or less models – output ranges A-M and X-Z
- 50 W models – output ranges N and W (K-case only)

For a description of the output ranges please see following pages.

Job Name:	Model Numbers:
<input type="text"/>	<input type="text"/>
Job Number:	<input type="text"/>

Specifications

Regulatory Approvals

- Meets ANSI C62.41 category A surge protection standards up to and including 4 kV.
- FCC Part 15 Class A
- CAN ICES-005(A)
- Manufacturing facilities employ ESD reduction practices that comply with the requirements of ANSI/ESD S20.20.
- Lutron Quality Systems registered to ISO 9001.2008.
- UL 8750 recognized.
- UL recognized models are also UL classified to 1598C for field replacement capability
- UL 8750 listed form factor available.
- Class 2 output available.
- Type TL Rated.
- L3DA4U1UKL-AV120 and L3DA4U1UKL-CV240 models are NOM certified and available for Mexico.

UL 8750 Listed Option

- cULus for United States and Canada available for certain operating regions.
- Pre-wired and installation ready.
- See **KL Enclosure** page for more specific details regarding UL listed option.
- UL 8750 Listed construction.
- Integral junction box to save time.
- For maximum driver-to-LED light engine wire length, see **Driver Leads** section near the end of this document.

Environmental

- Sound Rating: Inaudible in 27 dB ambient.
- Relative Humidity: Maximum 90% non-condensing.
- Minimum operating ambient temperature $t_a = 32\text{ }^\circ\text{F}$ ($0\text{ }^\circ\text{C}$).

Performance

- Dimming Range: 100% to 1%.
- Operating Voltage: 120 V \sim /277 V \sim at 50/60 Hz.
- Lifetime: 50,000 hours @:
 - $t_c = 149\text{ }^\circ\text{F}$ ($65\text{ }^\circ\text{C}$)¹ for 40 W drivers.
 - $t_c = 158\text{ }^\circ\text{F}$ ($70\text{ }^\circ\text{C}$)¹ for 50 W drivers.
 - For rated warranty, t_c not to exceed 149 °F (65 °C) for 40 W drivers and 158 °F (70 °C) for 50 W drivers (maximum rated temperatures).¹
- Patented thermal foldback protection.
- LEDs turn on to any dimmed level without going to full brightness.
- Non-volatile memory restores all driver settings after power failure.
- Power Factor: >0.90 for loads greater than 25 W
- Standby Power Consumption: <1.0 W
- Total Harmonic Distortion (THD): <20% for loads greater than 25 W.
- Inrush Current: <2 A.
- Inrush Current Limiting Circuitry: eliminates circuit breaker tripping, switch arcing and relay failure.
- Open circuit protected.
- Short circuit protected.
- Turn-on time: ≤ 1.5 seconds.²
- PWM Dimming Frequency: 550 Hz.

Driver Wiring and Mounting

- Driver is grounded by a mounting screw to the grounded fixture (or by terminal connection on the K-case).
- Terminal blocks on the driver accept one solid wire per terminal from 18 AWG to 16 AWG (0.75 mm^2 to 1.5 mm^2).
- Fixture must be grounded in accordance with local and national electrical codes.
- For maximum driver to LED light engine wire lengths see **Driver Leads** section at end of document.

¹ Installer is responsible for ensuring that the driver case temperature does not exceed the maximum rated temperature.

² Models available with turn-on time ≤ 1 second.

Job Name:	Model Numbers:	
<input type="text"/>	<input type="text"/>	<input type="text"/>
Job Number:	<input type="text"/>	<input type="text"/>

How to Build a Model Number: Hi-lume 1% EcoSystem/3-Wire

L3DA U1U -

Maximum Power:
 4 = 40 W maximum
 5 = 50 W maximum (K-case only)

Example: L3DA4U1UKS-HC070
 For further assistance selecting your model number, contact our LED Center of Excellence at 1.877.346.5338 or LEDs@lutron.com

Current Level (for Constant-Current):
 020 = 0.20 A; 021 = 0.21 A . . . 070 = 0.70 A . . . 210 = 2.10 A

Voltage Level (for Constant-Voltage):
 100 = 10.0 V; 105 = 10.5 V . . . 600 = 60.0 V

Case Size:
 K = Compact
 M = Stick

Case Style:
 S = Studded (K case only)
 N = Non-Studded
 L = UL Listed (K case only)

Driver Output:
 C = Constant-current driver with pulse width modulation (PWM) dimming
 A = Constant-current driver with constant-current reduction (CCR) dimming
 V = Constant-voltage driver with pulse width modulation (PWM) dimming

LED Load Output Range (see the following pages for more detail):

<p>40 W Drivers</p> <p><u>Class 2 Constant-Voltage</u></p> <p>A = 10.0 V–12.0 V*</p> <p>B = 12.5 V–20.0 V**</p> <p>C = 20.5 V–24.0 V**</p> <p>D = 24.5 V–38.0 V**</p> <p><u>Isolated Non-Class 2 Constant-Voltage</u></p> <p>X = 38.5 V–60.0 V**</p>	<p><u>Class 2 Constant-Current</u></p> <p>E = 0.20 A–0.50 A 30 V–54 V</p> <p>F = 0.51 A–1.00 A 30 V–54 V**</p> <p>G = 0.20 A–0.70 A 8 V–20 V</p> <p>H = 0.20 A–0.70 A 15 V–38 V</p> <p>I = 0.71 A–1.05 A 8 V–20 V</p> <p>J = 0.71 A–1.05 A 15 V–38 V</p> <p>K = 1.06 A–1.50 A 8 V–20 V</p> <p>L = 1.06 A–1.50 A 15 V–38 V**</p> <p>M = 1.51 A–2.10 A 8 V–19.9 V**</p> <p><u>Isolated Non-Class 2 Constant-Current</u></p> <p>Y = 0.20 A–0.50 A 30 V–60 V</p> <p>Z = 0.51 A–1.00 A 30 V–60 V**</p>	<p>50 W Drivers</p> <p><u>Class 2 Constant-Current</u></p> <p>N = 0.71 A–1.05 A 35 V–54 V**</p> <p><u>Isolated Non-Class 2 Constant-Current</u></p> <p>W = 0.71 A–1.05 A 35 V–60 V**</p>
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* 3.33 A maximum.
 ** Output parameter is power-limited for these output ranges. Consult detailed specifications on the following pages for each range.

Job Name:	Model Numbers:	
<input type="text"/>	<input type="text"/>	<input type="text"/>
Job Number:	<input type="text"/>	<input type="text"/>

How to Build a Bulk Model Number (For use with Lutron QwikFig technology): Hi-lume 1% EcoSystem/3-Wire

40 W Drivers

L3DA4U1U - BLK

Case Size:
K = Compact
M = Stick

Case Style:¹
S = Studded
(K-case only)
N = Non-Studded
(All M-case models)

Bulk Models:
Coverage based on “LED Load Output Range” from standard non-configurable models shown in the **How to Build a Model Number** section.
Example Standard model number: L3DA4U1UKS-HC070 has LED load output range = H

K-case and M-case
1A = Covers “LED Load Output Range” Y and Z
2A = Covers “LED Load Output Range” M
3A = Covers “LED Load Output Range” E and F (CCR dimming only)

K-case only
2G = Covers “LED Load Output Range” G
2H = Covers “LED Load Output Range” H
2R= Covers “LED Load Output Range” I and K
2S= Covers “LED Load Output Range” J and L

M-case only
2B = Covers “LED Load Output Range” H, J, and L
2C = Covers “LED Load Output Range” G, I, and K

50 W Drivers

L3DA5U1UK - BLK

Case Style:
S = Studded
N = Non-Studded



1B = Covers “LED Load Output Range” W
3B = Covers “LED Load Output Range” N (CCR dimming only)

Note: Only the model numbers falling into the structure listed above can be configured with QwikFig. Standard model numbers configured at Lutron will not be capable of being reconfigured at another facility.

¹ QwikFig bulk drivers are only available as UL recognized.

Job Name: <input type="text"/>	Model Numbers: <input type="text"/>	
Job Number: <input type="text"/>	<input type="text"/>	<input type="text"/>

“J” Output Range, Current Driver Models

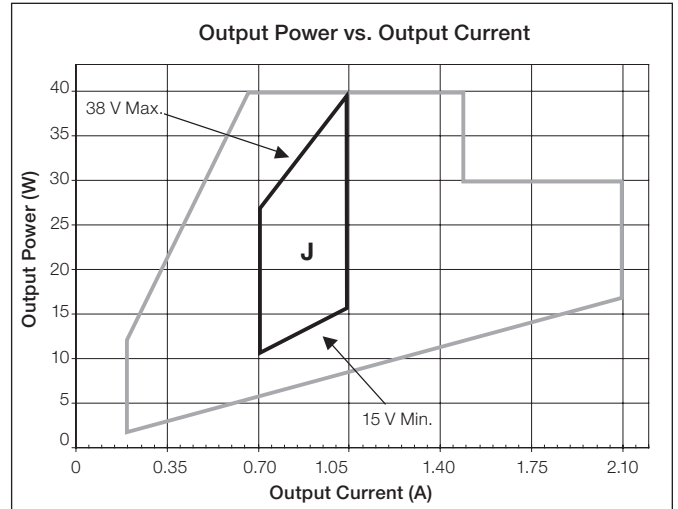
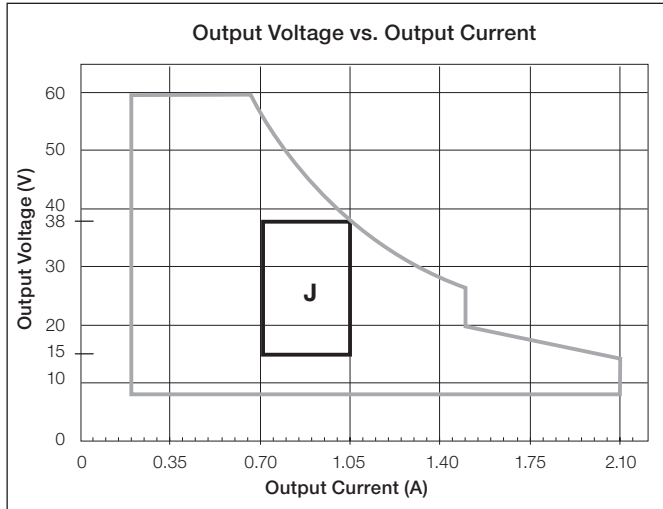
Driver Type	Output Dimming Method	Output Voltage	Output Current	Output Power	Standards Recognition	KL Case Option	Standards Recognition for KL Case
Constant-Current Driver (Class 2)	Pulse Width Modulation (PWM)	15–38 V PWM	0.71–1.05 A	11–40 W	 Type TL 86 °/69 °C - K-case Type TL 89 °/74 °C - M-case	Yes	
	Constant-Current Reduction (CCR)	15–38 V---					

When using QwikFig technology, these models can be built from the following bulk units:

K-case - L3DA4U1UKx-2SBLK*; M-case - L3DA4U1UMN-2BBLK

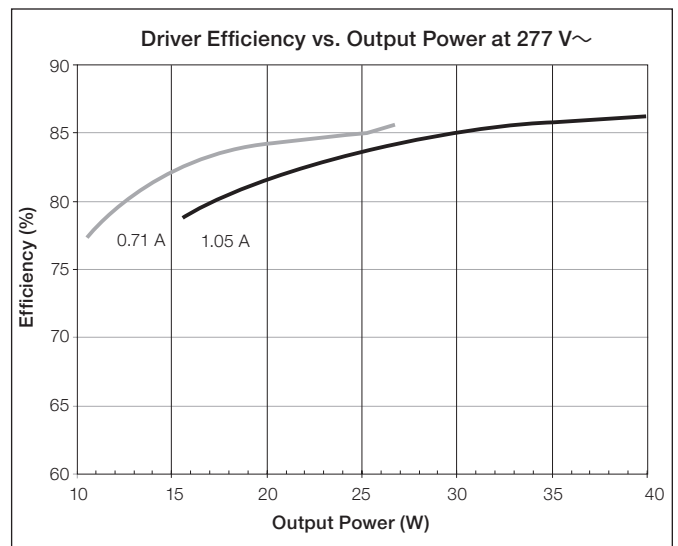
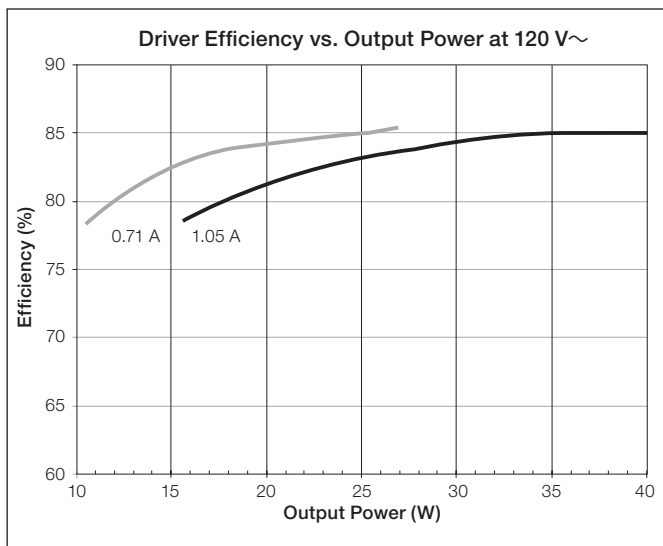
* x = studded (S) or non-studded (N)

Current Driver Operation Range:



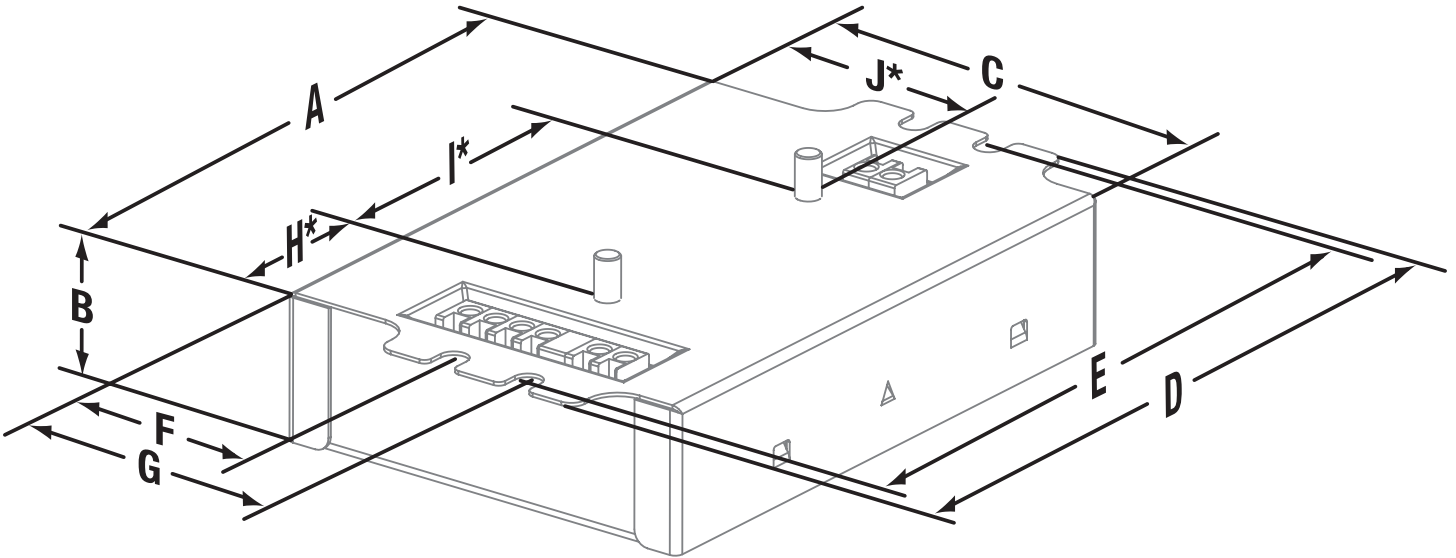
Typical Performance Specifications:

Parameter	120 V~	240 V~	277 V~	Test Conditions
Input Current	390 mA	200 mA	170 mA	t _a = 25 °C, 1.05 A 40 W load, Maximum Light Output, K-case
Power Factor	0.99	0.98	0.97	
THD	6%	9%	10%	
Driver Efficiency	85%	86%	86%	

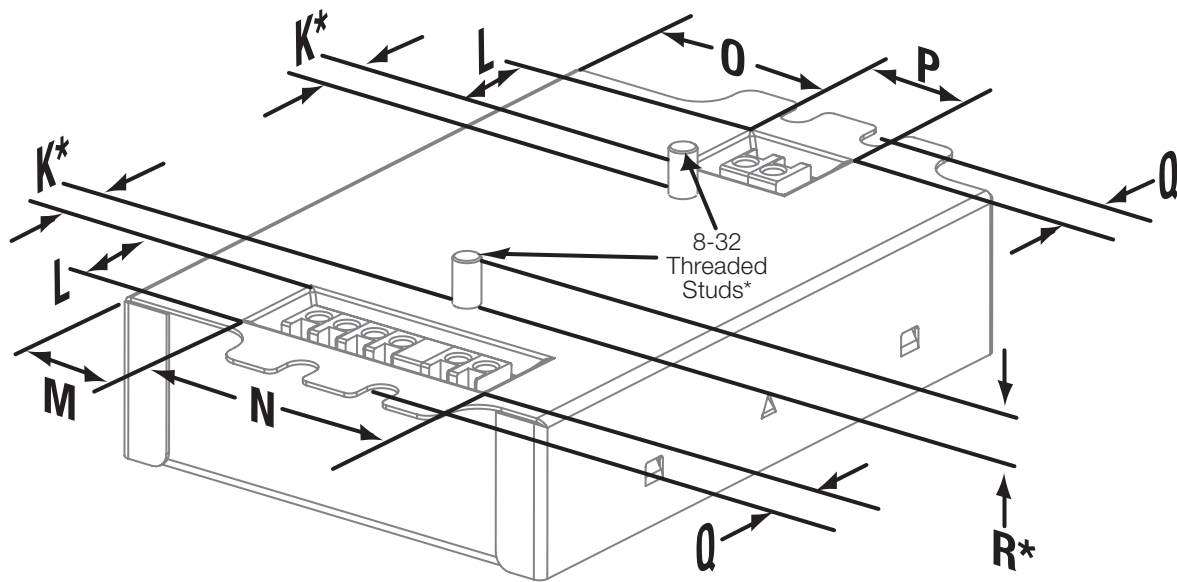


Job Name:	Model Numbers:	
<input type="text"/>	<input type="text"/>	<input type="text"/>
Job Number:	<input type="text"/>	<input type="text"/>

K-Case: Case Dimensions



K-Case: Connector Location Dimensions

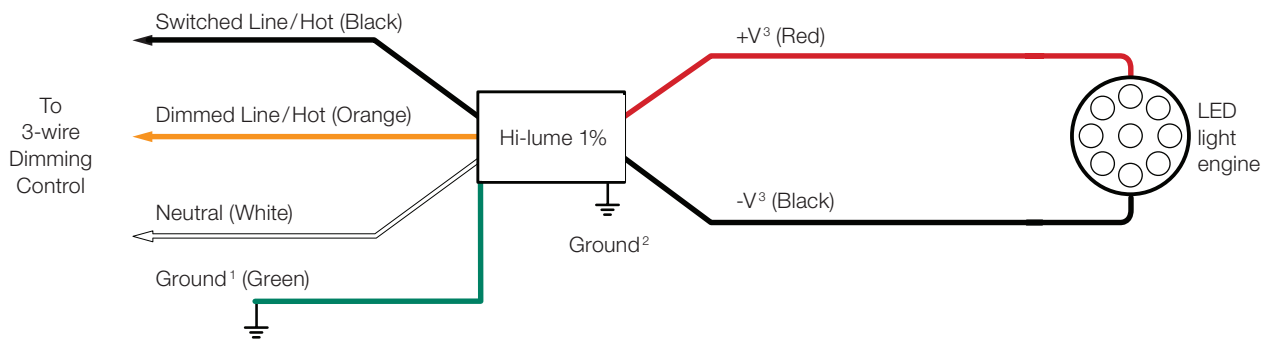


A	4.20 in (107 mm)	F	1.42 in (36 mm)	K*	0.33 in (8.3 mm)	P	0.74 in (19 mm)
B	1.00 in (25 mm)	G	1.99 in (51 mm)	L	0.65 in (16.5 mm)	Q	0.32 in (8 mm)
C	3.00 in (76 mm)	H*	1.11 in (28 mm)	M	0.75 in (19 mm)	R*	0.29 in (7 mm)
D	4.90 in (124 mm)	I*	2.00 in (51 mm)	N	1.73 in (44 mm)		
E	4.60 in (117 mm) (mounting center)	J*	1.60 in (41 mm)	O	1.33 in (34 mm)		

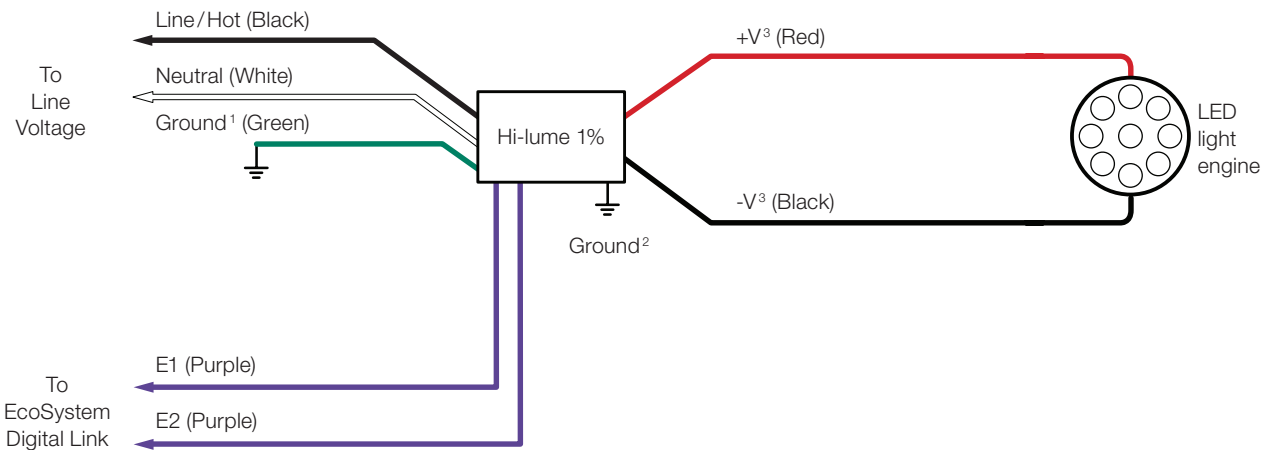
* Applies to studded K-case only.

Job Name:	Model Numbers:	
<input type="text"/>	<input type="text"/>	<input type="text"/>
Job Number:	<input type="text"/>	<input type="text"/>

Wiring Diagram for 3-Wire Control



Wiring Diagram for EcoSystem Digital Control



Note: Colors shown correspond to terminal blocks on driver.

- ¹ Ground wire connection available on K-case models only.
- ² Fixture and driver case must be grounded in accordance with local and national electrical codes.
- ³ For maximum driver-to-LED light engine wire length, see charts in **Driver Leads** section at the end of the document.

Job Name:	Model Numbers:	
<input type="text"/>	<input type="text"/>	<input type="text"/>
Job Number:	<input type="text"/>	<input type="text"/>

EcoSystem Wiring Diagrams

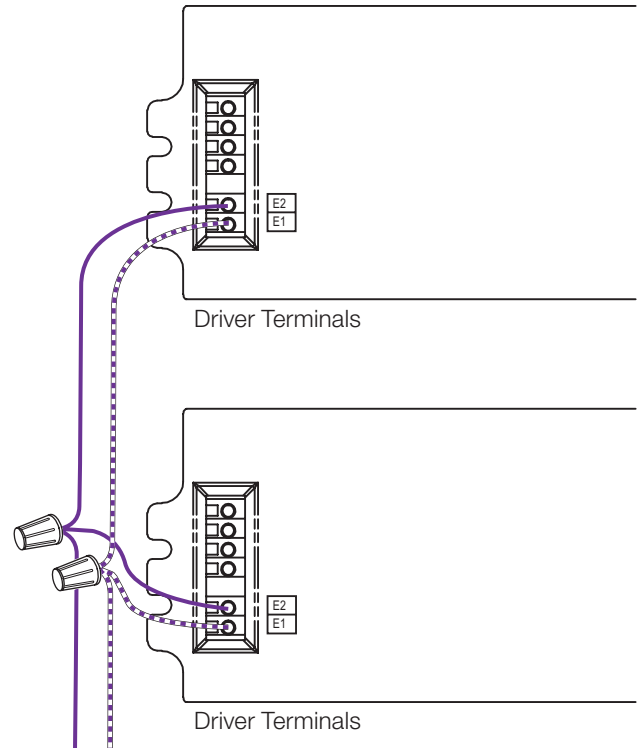
EcoSystem Digital Link Overview

- The EcoSystem Digital Link wiring (E1 and E2) connects the digital ballasts and drivers together to form a lighting control system.
- Each EcoSystem Digital Link supports up to 64 digital ballasts, LED drivers or EcoSystem Modules (e.g. C5-BMJ-16A, C5-XPJ-16A), 32 occupancy sensors (64 occupancy sensors with Energi Savr Node with EcoSystem), 16 daylight sensors, and 64 wallstations or IR receivers.*
- Sensors do not directly connect to Hi-lume 1% EcoSystem/3-Wire LED drivers.
- E1 and E2 (EcoSystem digital link wires) are polarity insensitive and can be wired in any topology.
- An Energi Savr Node unit with EcoSystem, GRAFIK Eye QS control unit with EcoSystem, PowPak dimming module with EcoSystem, or Quantum system provides power for the EcoSystem Digital Link and supports system programming.*
- All EcoSystem Digital Link programming is completed by using the Energi Savr app for Apple iPad, iPod Touch or iPhone mobile digital devices, GRAFIK Eye QS with EcoSystem, PowPak dimming module with EcoSystem, or Quantum system.

EcoSystem Digital Link Wiring

- Driver EcoSystem Digital Link terminals only accept one 18 AWG to 16 AWG (0.75 mm² to 1.5 mm²) solid copper wire per terminal.
- Make sure that the supply breaker to the Digital Driver and EcoSystem Digital Link Supply is OFF when wiring.
- Connect the two conductors to the two Digital Driver terminals E1 and E2 as shown.
- Using two different colors for E1 and E2 will reduce confusion when wiring several drivers together.
- The EcoSystem Digital Link may be wired Class 1 or Class 2. Consult applicable electrical codes for proper wiring practices.

* PowPak dimming module with EcoSystem provides power for the EcoSystem Digital Link and can support 32 digital ballasts, LED drivers or EcoSystem Modules, 6 Wireless Occupancy Sensors, 1 Wireless Daylight Sensor, and 9 Pico Wireless Controllers.



To the EcoSystem Digital Bus and additional drivers and/or ballasts

Notes

- The EcoSystem Digital Link Supply does not have to be located at the end of the Digital Link.
- EcoSystem Digital Link length is limited by the wire gauge used for E1 and E2 as follows:

Wire Gauge	Digital Link Length (max)
12 AWG	2200 ft
14 AWG	1400 ft
16 AWG	900 ft
18 AWG	550 ft

Wire Size	Digital Link Length (max)
4.0 mm ²	828 m
2.5 mm ²	517 m
1.5 mm ²	310 m
1.0 mm ²	207 m
0.75 mm ²	155 m

Job Name:	Model Numbers:	
<input type="text"/>	<input type="text"/>	<input type="text"/>
Job Number:	<input type="text"/>	<input type="text"/>