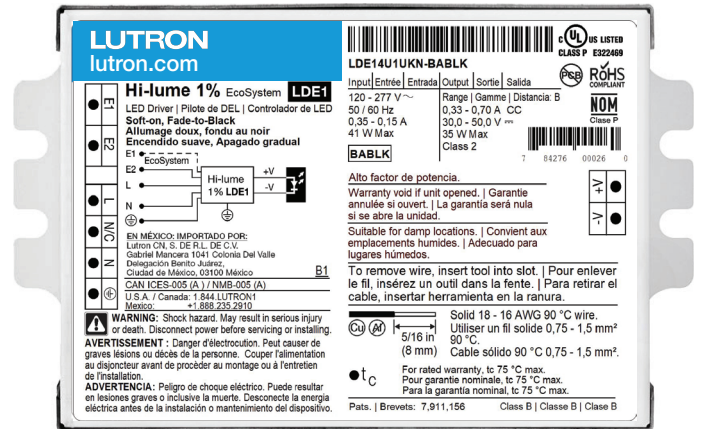


Hi-lume 1% EcoSystem LED Driver with Soft-on, Fade-to-Black

Hi-lume 1% EcoSystem LED Drivers with Soft-on, Fade-to-Black provide a high-performance solution for any space, in any application. They provide smooth, continuous dimming down to 1% of full output current, and fade smoothly between 0% and 1% with Soft-on, Fade-to-Black.

Features

- cULus® Listed Class P for USA and Canada.
- UL® Type TL rated. Visit “Online Certificates Directory” at www.ul.com, enter file number “E322469” to determine the Type TL numbers specific to the LDEX model Lutron LED Driver.
- Soft-on, Fade-to-Black: fades smoothly between 0% and 1% when turned on and off for an incandescent-like experience.
- Continuous, flicker-free dimming from 100% to 1%¹.
- Dimming Method:
 - Constant-current reduction dimming provides video-friendly performance down to 5%
 - PWM dimming below 5% (240 Hz), % Modulation = 100%
- Guaranteed dimming performance when used with Lutron EcoSystem controls.
- Guaranteed compatibility with Energi Savr Node units with EcoSystem, GRAFIK Eye QS with EcoSystem, PowPak dimming module with EcoSystem, and Quantum systems, allowing for integration into a planned or existing EcoSystem lighting control solution.
- QwikFig compatible models available, see **How to Build a Model Number** page for details. For more information, please refer to the QwikFig User Guide (Lutron P/N 041473) or contact your Lutron sales representative.
- Protected from miswires of input power to EcoSystem control inputs up to 277 V~.
- Rated lifetime of 50,000 hours at 75 °C calibration point (t_c).
- FCC Part 15 Class A
- 100% performance tested at factory before shipping.
- RoHS compliant.
- Non-volatile memory restores all settings after power failure.
- For more information please visit: www.lutron.com/hilume1softbled



K-case type

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



M-case type

1.18 in (30 mm) W × 1.00 in (25 mm) H × 14.13 in (359 mm) L

EcoSystem Features

- Simpler to wire and more reliable than 0–10 V~.
- Guarantees compatibility between Lutron controls, LED drivers, ballasts, and sensors.
- Accommodates zone and control changes without rewiring.
- Link to Lutron Quantum Total Light Management System to monitor lighting power consumption.
- Polarity-free and topology-free.
- Digital EcoSystem intelligence allows easy code compliance.
- Digital EcoSystem control link can be Class 1 or Class 2.
- Upon loss of Digital EcoSystem control link, drivers go to emergency level (default is high-end, but can be programmed during system setup).

¹ Light output at 1% depends on the efficacy of the LED light engine used with the driver.

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

Specifications

Regulatory Approvals and Compliance

- cULus® Listed Class P for USA and Canada
- NOM certified for “BLK” models only (requires QwikFig and a K- or M-can nest to configure)
- Lutron Quality Systems registered to ISO 9001.2015
- Manufacturing facilities employ ESD reduction practices that comply with the requirements of ANSI/ESD S20.20
- Meets ANSI C62.41 category A surge protection standards up to and including 4 kV
- Inrush current less than NEMA 410-2011 limit
- FCC Part 15 Class A
- Canadian EMI Class A Compliance Equivalent: CAN ICES-005(A)/NMB-005(A)
- Meets UL 8750, “Light Emitting Diode (LED) Equipment For Use in Lighting Products”
- Class 2 output
- LED drivers need to meet certain performance criteria in order for the completed luminaires to comply with the ENERGY STAR® Luminaires V2.0 Specification. All models meet these performance criteria throughout their entire load compatibility regions. Consult Application Note #599 (P/N 048599), **ENERGY STAR® Luminaires V2.0 and Lutron Drivers**, at www.lutron.com for availability dates of compliant products
- LED drivers need to meet certain performance criteria in order for the completed luminaires to comply with Title 24 requirements as detailed in CEC-400-2015-037-CMF. All models meet both commercial (at 120 V~/277 V~) and residential (at 120 V~) performance criteria throughout their entire load operating regions. Consult **CEC-400-2015-032-CMF Section 6.2.7** for important information on meeting start-up time requirements with fade-in lighting.
- M-case type performance is in compliance with DLC version 2.1 in designated areas (see “Load Compatibility” graph in **Output Range** pages)

Performance

- Soft-on, Fade-to-Black: fades smoothly between 0% and 1% when turned on and off for an incandescent-like experience
- Dimming Range: 100% to 1%¹
- Operating Voltage: 120 V~/277 V~ at 50/60 Hz
- Lifetime: 50,000 hours when calibration point (t_c) at 75 °C²
- For rated warranty, t_c not to exceed 75 °C (maximum rated temperature)²

 SPECIFICATION SUBMITTAL

- Patented thermal foldback protection
- At turn on, lighting fades smoothly to the desired level without decreasing or flashing to full brightness
- Non-volatile memory restores all driver settings after power failure
- Typical standby power consumption: 0.2 W at 120 V~ and 0.3 W at 277 V~
- Open-circuit protected output
- Short-circuit and overload-protected output
- Class 2 output designed to withstand hot swap of the LED load

Environmental

- Sound rated: Class A inaudible in 24 dBA ambient
- Relative Humidity: maximum 90% non-condensing
- Minimum Operating Ambient Temperature: $t_a = 0\text{ }^{\circ}\text{C}^3$
- Indoor use only
- Rated for dry and damp locations

Driver Wiring and Mounting

- Driver is grounded by a mounting screw to the grounded fixture or by terminal connection
- Terminal blocks on the driver accept one solid wire per terminal from 18 AWG to 16 AWG (0.75 mm² to 1.5 mm²)
- Fixture must be grounded in accordance with local and national electrical codes
- Maximum driver-to-LED light engine wire length for:

Wire Gauge	Maximum Lead Length		
	150 mA to 700 mA	710 mA to 1.50 A	1.51 A to 2.10 A
18 AWG (0.75 mm ²)	30 ft (9 m)	15 ft (4.5 m)	10 ft (3 m)
16 AWG (1.5 mm ²)	35 ft (10.5 m)	25 ft (7.5 m)	15 ft (4.5 m)
14 AWG (2.5 mm ²) ⁴	50 ft (15 m)	40 ft (12 m)	25 ft (7.5 m)
12 AWG (4.0 mm ²) ⁴	100 ft (30 m)	60 ft (18 m)	40 ft (12 m)

¹ Light output at 1% depends on the efficacy of the LED light engine used with the driver.

² To maintain warranty, installer is responsible for ensuring that the driver calibration point does not exceed 75 °C.

³ Where t_a is the temperature of the air directly surrounding the driver.

⁴ Terminal blocks on the drivers accept only solid 18 AWG to 16 AWG (0.75 mm² to 1.5 mm²) wire. To use wire gauges larger than the terminal blocks' rated gauge of 16 AWG (1.5 mm²) refer to the **Terminal Wiring Gauges** diagram. Connect up to 3 ft (1.0 m) of 18 AWG to 16 AWG (0.75 mm² to 1.5 mm²) wire to the LED driver terminal blocks, then connect 12 AWG or 14 AWG (4.0 mm² or 2.5 mm²) up to the length allowed in the above table.

Job Name:

Model Numbers:

Job Number:

How to Select the Correct LED Driver for Your Load

1. Review the specifications of the LED load.
2. Identify the minimum and maximum operating voltage of the LED load at the desired operating current. This “current” will be the rated output current of the LED driver. Consult the LED load manufacturer for any questions.

Example: An LED load that is rated at 1 A and 33 V nominally, has an output voltage range of 28–38 V (at 1 A) due to unit-to-unit variation, temperature, etc.

3. Determine the proper operating range of the LED driver.
 - a. Identify the output range(s) of the driver family that includes the desired current.

- i. Select Current

Example: Only “B”, “C”, “U”, and “V” models meet the current range of the selected load (1 A).

LED Load Output Range

L = 0.15–0.32 A, 20–40 V_{DC}, 5–10 W

M = 0.25–0.50 A, 20–40 V_{DC}, 6.5–14 W

N = 0.35–0.75 A, 20–40 V_{DC}, 10–20 W

B = 0.50–1.25 A, 20–40 V_{DC}, 15–35 W

C = 0.88–1.75 A, 20–40 V_{DC}, 25–50 W

D = 1.25–2.10 A, 20–40 V_{DC}, 35–75 W

J = 0.15–0.30 A, 30–50 V_{DC}, 6–12 W

K = 0.24–0.50 A, 30–50 V_{DC}, 9–20 W

T = 0.40–0.83 A, 30–50 V_{DC}, 15–35 W

U = 0.70–1.33 A, 30–50 V_{DC}, 25–50 W

V = 1.00–1.88 A, 30–50 V_{DC}, 40–75 W

- ii. Select Voltage

Example: Out of the 4 models indicated above, only “B” and “C” models meet the voltage requirement for the selected load (28–38 V).

LED Load Output Range

L = 0.15–0.32 A, 20–40 V_{DC}, 5–10 W

M = 0.25–0.50 A, 20–40 V_{DC}, 6.5–14 W

N = 0.35–0.75 A, 20–40 V_{DC}, 10–20 W

B = 0.50–1.25 A, 20–40 V_{DC}, 15–35 W

C = 0.88–1.75 A, 20–40 V_{DC}, 25–50 W

D = 1.25–2.10 A, 20–40 V_{DC}, 35–75 W

J = 0.15–0.30 A, 30–50 V_{DC}, 6–12 W

K = 0.24–0.50 A, 30–50 V_{DC}, 9–20 W

T = 0.40–0.83 A, 30–50 V_{DC}, 15–35 W

U = 0.70–1.33 A, 30–50 V_{DC}, 25–50 W

V = 1.00–1.88 A, 30–50 V_{DC}, 40–75 W

continued on next page...

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

How to Select the Correct LED Driver for Your Load (continued)

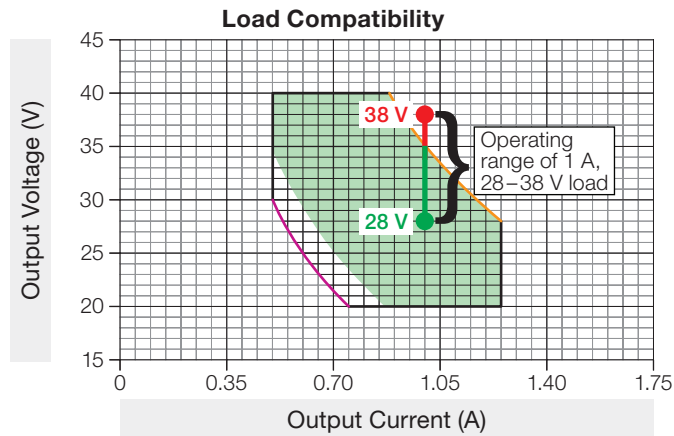
b. Examine the **Load Compatibility** graphs below for each output range to ensure that the voltage range of the LED load is within the safe operating area.

iii. Select Power

Example: Lines marked below indicate load specifications (28–38 V at 1 A).

“B” Model (Not Compatible) ❌

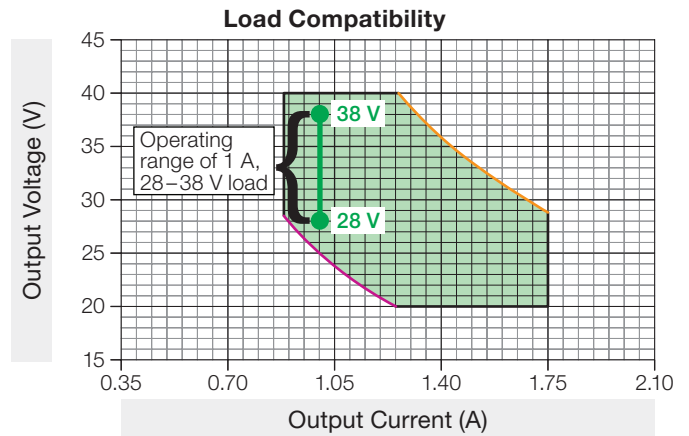
Since the maximum voltage of the load (38 V) exceeds the allowable voltage of “B” model (35 V at 1 A), this model is not compatible.



Key:
 Shaded area meets DLC Version 2.1 (areas outside of shaded areas may not meet THD [total harmonic distortion] or PF [power factor] requirements).
 Constant 15 W output Constant 35 W output

“C” Model (Compatible) ✅

Operating voltage range for “C” model is 25–40 V at 1 A. Since the load specifications are within the operating range, “C” model is compatible for this load.



Key:
 Shaded area meets DLC Version 2.1 (areas outside of shaded areas may not meet THD [total harmonic distortion] or PF [power factor] requirements).
 Constant 25 W output Constant 50 W output

4. See **How to Build A Model Number** to create the appropriate model number for the desired driver. If a QwikFig compatible driver is needed, identify the proper **LED Load Output Range** (voltage and current) and insert “BLK” in the **Current Level (for Constant Current)** section of the model number.

Job Name: <input style="width: 90%; height: 20px;" type="text"/>	Model Numbers: <input style="width: 95%; height: 20px;" type="text"/>	
Job Number: <input style="width: 80%; height: 20px;" type="text"/>	<input style="width: 95%; height: 20px;" type="text"/>	<input style="width: 95%; height: 20px;" type="text"/>

K-Case Models: “C” Output Range (continued)

Output Current and Compatible Load Voltage

Model Number* LDE14U1UKS/N	Rated Output Current (A)	Compatible Load Voltage (V)		Typical Performance at Minimum Compatible Load Voltage			Typical Performance at Maximum Compatible Load Voltage		
		Minimum	Maximum	Power Factor at 120 V~/277 V~	THD at 120 V~/277 V~	Efficiency at 120 V~/277 V~	Power Factor at 120 V~/277 V~	THD at 120 V~/277 V~	Efficiency at 120 V~/277 V~
-CA046	0.46	27.1	37.1	0.97/0.89	21%/20%	80%/80%	0.98/0.92	19%/18%	83%/83%
-CA047	0.47	26.8	37.1	0.97/0.89	21%/20%	80%/80%	0.98/0.92	19%/18%	83%/83%
-CA048	0.48	26.5	37.1	0.97/0.89	21%/20%	80%/80%	0.98/0.92	18%/18%	83%/83%
-CA049	0.49	26.2	37.1	0.97/0.90	21%/20%	80%/80%	0.98/0.92	18%/18%	83%/84%
-CA050	0.50	25.9	37.1	0.97/0.90	20%/19%	80%/80%	0.98/0.92	18%/18%	83%/84%
-CA051	0.51	25.6	37.1	0.97/0.90	20%/19%	80%/80%	0.98/0.93	18%/17%	83%/84%
-CA052	0.52	25.3	37.1	0.97/0.90	20%/19%	80%/80%	0.98/0.93	18%/17%	83%/84%
-CA053	0.53	25.0	37.1	0.97/0.90	20%/19%	80%/80%	0.98/0.93	18%/17%	83%/84%
-CA054	0.54	24.7	37.1	0.97/0.90	20%/19%	80%/80%	0.98/0.93	18%/17%	84%/84%
-CA055	0.55	24.4	37.1	0.97/0.90	20%/19%	80%/80%	0.98/0.93	17%/17%	84%/84%
-CA056	0.56	24.2	37.1	0.97/0.90	20%/19%	80%/80%	0.98/0.93	17%/17%	84%/85%
-CA057	0.57	23.9	37.1	0.97/0.90	20%/19%	80%/80%	0.98/0.93	17%/17%	84%/85%
-CA058	0.58	23.6	37.1	0.97/0.90	20%/19%	79%/80%	0.98/0.93	17%/17%	84%/85%
-CA059	0.59	23.3	37.1	0.97/0.90	20%/19%	79%/80%	0.98/0.94	17%/16%	84%/85%
-CA060	0.60	23.1	37.1	0.97/0.90	20%/19%	79%/80%	0.98/0.94	17%/16%	84%/85%
-CA061	0.61	22.8	37.1	0.97/0.90	20%/19%	79%/80%	0.98/0.94	17%/16%	84%/85%
-CA062	0.62	22.5	37.1	0.97/0.90	20%/19%	79%/80%	0.98/0.94	16%/16%	84%/85%
-CA063	0.63	22.3	37.1	0.97/0.90	20%/19%	79%/80%	0.98/0.94	16%/16%	84%/85%
-CA064	0.64	22.0	37.1	0.97/0.90	20%/19%	79%/80%	0.98/0.94	16%/16%	84%/85%
-CA065	0.65	21.8	37.1	0.97/0.90	20%/19%	79%/80%	0.98/0.94	16%/16%	84%/85%
-CA066	0.66	21.5	37.1	0.97/0.90	20%/19%	79%/79%	0.98/0.94	16%/16%	84%/85%
-CA067	0.67	21.3	37.1	0.97/0.90	20%/19%	79%/79%	0.98/0.94	16%/16%	84%/85%
-CA068	0.68	21.0	37.1	0.97/0.90	20%/19%	79%/79%	0.98/0.94	15%/16%	84%/85%
-CA069	0.69	20.8	37.1	0.97/0.90	20%/19%	79%/79%	0.98/0.95	15%/16%	84%/85%
-CA070	0.70	20.6	37.1	0.97/0.90	20%/19%	79%/79%	0.98/0.95	15%/16%	84%/85%
-CA071	0.71	20.3	36.6	0.97/0.90	20%/19%	78%/79%	0.98/0.95	15%/16%	84%/85%
-CA072	0.72	20.1	36.1	0.97/0.90	20%/18%	78%/79%	0.98/0.95	15%/16%	84%/85%
-CA073	0.73	19.9	35.6	0.97/0.90	20%/18%	78%/79%	0.98/0.95	15%/16%	84%/85%
-CA074	0.74	19.6	35.1	0.97/0.90	20%/18%	78%/79%	0.98/0.95	15%/16%	84%/85%
-CA075	0.75	19.4	34.7	0.97/0.90	20%/18%	78%/79%	0.98/0.95	15%/16%	83%/85%
-CA076	0.76	19.2	34.2	0.97/0.90	20%/18%	78%/79%	0.98/0.95	15%/16%	83%/85%
-CA077	0.77	19.0	33.8	0.97/0.90	20%/18%	78%/78%	0.98/0.95	15%/16%	83%/85%
-CA078	0.78	18.8	33.3	0.97/0.90	20%/18%	78%/78%	0.98/0.95	15%/16%	83%/85%
-CA079	0.79	18.6	32.9	0.97/0.90	19%/18%	78%/78%	0.98/0.95	15%/16%	83%/85%
-CA080	0.80	18.4	32.5	0.97/0.90	19%/18%	77%/78%	0.98/0.95	15%/16%	83%/85%
-CA081	0.81	18.2	32.1	0.97/0.91	19%/18%	77%/78%	0.98/0.95	15%/16%	83%/84%
-CA082	0.82	18.0	31.7	0.97/0.91	19%/18%	77%/78%	0.98/0.95	15%/16%	83%/84%
-CA083	0.83	17.8	31.3	0.97/0.91	19%/18%	77%/78%	0.98/0.95	15%/16%	83%/84%

* See How to Build a Model Number, K-Case Type page for a sample model number.

continued on next page...

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