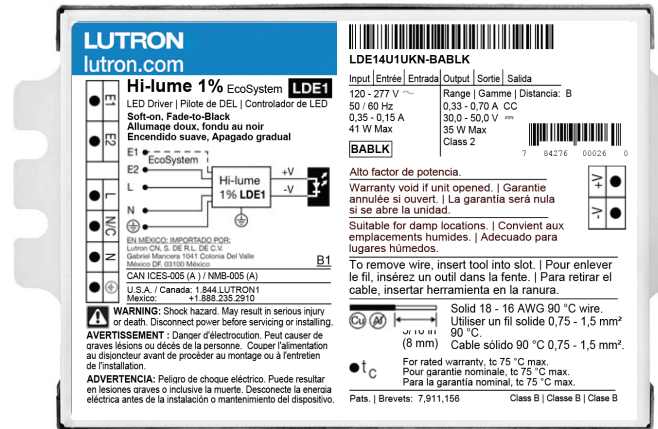


## Hi-lume 1% EcoSystem LED Driver with Soft-on, Fade-to-Black

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

- UL® Listed Class P.
- UL® Type TL rated. Visit “Online Certificates Directory” at [www.ul.com](http://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%<sup>1</sup>.
- 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<sub>rms</sub>.
- Rated lifetime of 50,000 hours at 75 °C (167 °F) calibration point (t<sub>c</sub>).
- FCC Part 15 Class A
- 100% performance tested at factory before shipping.
- RoHS compliant.



### Case type K

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



### Case type M

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

- Non-volatile memory restores all settings after power failure.
- For more information please visit: [www.lutron.com/hilume1softbled](http://www.lutron.com/hilume1softbled)

### EcoSystem Features

- Simpler to wire and more reliable than 0–10 V<sub>rms</sub>.
- 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.

<sup>1</sup> 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"/>	<input type="text"/>
Job Number:	<input type="text"/>	<input type="text"/>

## Specifications

### Regulatory Approvals and Compliance

- UL® Listed Class P
- NOM certified for Mexico (only “BLK” models for use with Lutron QwikFig technology)
- 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](http://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%<sup>1</sup>
- Operating Voltage: 120 V~ to 277 V~ at 50/60 Hz
- Lifetime: 50,000 hours when calibration point ( $t_c$ ) at 75 °C (167 °F)<sup>2</sup>
- For rated warranty,  $t_c$  not to exceed 75 °C (167 °F) (maximum rated temperature)<sup>2</sup>

**LUTRON** 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:  $t_a = 0\text{ °C}$  (32 °F)<sup>3</sup>
- 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 mm<sup>2</sup> to 1.5 mm<sup>2</sup>)
- 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 <sup>2</sup> )	30 ft (9 m)	15 ft (4.5 m)	10 ft (3 m)
16 AWG (1.5 mm <sup>2</sup> )	35 ft (10.5 m)	25 ft (7.5 m)	15 ft (4.5 m)
14 AWG (2.5 mm <sup>2</sup> ) <sup>4</sup>	50 ft (15 m)	40 ft (12 m)	25 ft (7.5 m)
12 AWG (4.0 mm <sup>2</sup> ) <sup>4</sup>	100 ft (30 m)	60 ft (18 m)	40 ft (12 m)

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

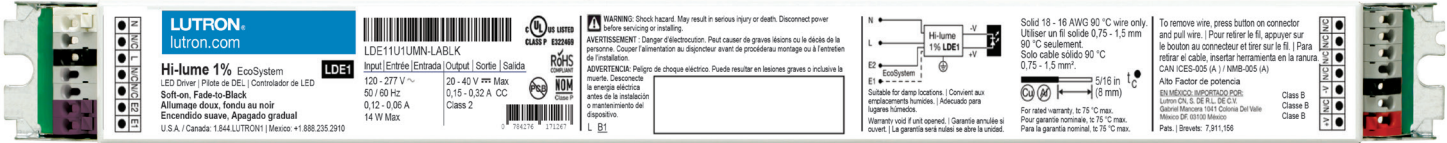
<sup>2</sup> To maintain warranty, installer is responsible for ensuring that the driver calibration point does not exceed 75 °C (167 °F).

<sup>3</sup> Where  $t_a$  is the temperature of the air directly surrounding the driver.

<sup>4</sup> Terminal blocks on the drivers accept only solid 18 AWG to 16 AWG (0.75 mm<sup>2</sup> to 1.5 mm<sup>2</sup>) wire. To use wire gauges larger than the terminal blocks' rated gauge of 16 AWG (1.5 mm<sup>2</sup>) refer to the **Terminal Wiring Gauges** diagram. Connect up to 3 ft (1.0 m) of 18 AWG to 16 AWG (0.75 mm<sup>2</sup> to 1.5 mm<sup>2</sup>) wire to the LED driver terminal blocks, then connect 12 AWG or 14 AWG (4.0 mm<sup>2</sup> or 2.5 mm<sup>2</sup>) up to the length allowed in the above table.

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, M-Case Type (“BLK” models for use with Lutron QwikFig technology): Hi-lume 1% EcoSystem (up to 75 W) LED Driver with Soft-on, Fade-to-Black



**M-case type**

L D E 1 U 1 U M N - A

**LED Load Power Range**  
(Power Range number is based on Load Output Range category)

- 1: select if LED Load Output Range is “J,” “L,” or “M”
- 2: select if LED Load Output Range is “K” or “N”
- 3: select if LED Load Output Range is “B” or “T”
- 5: select if LED Load Output Range is “C” or “U”
- 7: select if LED Load Output Range is “D” or “V”

**LED Load Output Range: Class 2 Constant Current**  
(see the following pages for more detail)

- L: 0.15–0.32 A, 20.0–40.0 V<sup>\*\*\*</sup>, 5–10 W
- M: 0.25–0.50 A, 20.0–40.0 V<sup>\*\*\*</sup>, 6.5–14 W
- N: 0.35–0.75 A, 20.0–40.0 V<sup>\*\*\*</sup>, 10–20 W
- B: 0.50–1.25 A, 20.0–40.0 V<sup>\*\*\*</sup>, 15–35 W
- C: 0.88–1.75 A, 20.0–40.0 V<sup>\*\*\*</sup>, 25–50 W
- D: 1.25–2.10 A, 20.0–40.0 V<sup>\*\*\*</sup>, 35–75 W
- J: 0.15–0.30 A, 30.0–50.0 V<sup>\*\*\*</sup>, 6–12 W
- K: 0.24–0.50 A, 30.0–50.0 V<sup>\*\*\*</sup>, 9–20 W
- T: 0.40–0.83 A, 30.0–50.0 V<sup>\*\*\*</sup>, 15–35 W
- U: 0.70–1.33 A, 30.0–50.0 V<sup>\*\*\*</sup>, 25–50 W
- V: 1.00–1.88 A, 30.0–50.0 V<sup>\*\*\*</sup>, 40–75 W

**Example: LDE13U1UMN-BA070**

- 0.70 A
- 15–28 W<sup>\*\*</sup>
- 21.5–40.0 V<sup>†</sup> LED driver

For further assistance in selecting your model number, contact our LED Center of Excellence at **LEDs@lutron.com**

<sup>\*\*</sup> At 0.7 A, maximum voltage of 40 V provides 28 W (0.7 A × 40.0 V = 28 W)

<sup>†</sup> Minimum voltage of LDE13U1UMN-BA070 limited by 15 W minimum power: 15 W ÷ 0.70 A = 21.5 V

**Current Level (for Constant-Current)**

- 015 = 0.15 A
- 210 = 2.10 A

**Option 1:** Order a driver configured by Lutron to a desired output current.

**Example:** LDE13U1UMN-BA070 has been pre-configured at Lutron to an output of 0.70 A. Refer to the example above.

**Note:** Lutron pre-configured drivers are *not* QwikFig compatible and cannot be re-configured.

**Option 2:** Order a QwikFig compatible driver.

**Example:** LDE13U1UMN-BABLK (0.5–1.25 A)\*



**Note:** Default set to minimum output current for the respective **LED Load Output Range**.

**Attention:** Model numbers may appear similar to Lutron Hi-lume 1% EcoSystem, Hi-lume 1% 3-wire, or Hi-lume 1% 2-wire drivers, but they are not direct model-for-model replacements. Please note the driver’s output rating and the load ratings to select the correct product for your fixture.

\* Output voltage range changes with output current and according to power limits. Check driver specifications on the following pages carefully to understand output voltage range of a particular SKU. Purchaser is responsible for electrical compatibility between LED driver and LED load.

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

### M-Case Models: "L" Output Range

Driver Type	Output Voltage	Output Current	Output Power	Standards Recognition	Maximum Rated Temp. @ t <sub>c</sub> for Warranty
Constant Current Driver (Class 2)	20–40 V $\sim$	0.15–0.32 A*	5–10 W	 	75 °C

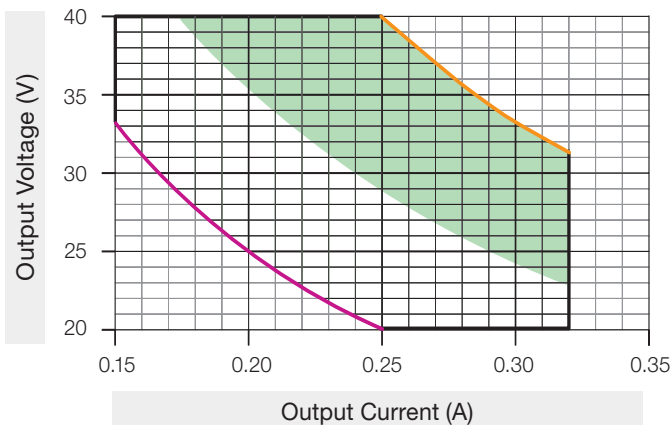
\* QwikFig compatible model number LDE11U1UMN-LABLK is configurable to any current within this range in 0.01 A increments.

\*\* BLK model LDE11U1UMN-LABLK is NOM certified and available for Mexico.

#### Typical Performance Specifications:

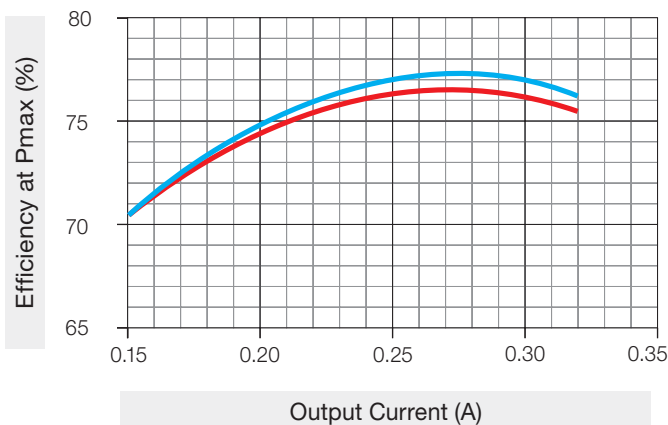
Parameter	Value	Test Conditions
Input Current	0.05 A	V <sub>i</sub> = 277 V $\sim$ , t <sub>a</sub> = 25 °C, I <sub>o</sub> = 0.25 A, V <sub>o</sub> = 40 V $\sim$ , Maximum Light Output LDE11U1UMN-LA025
Power Factor	0.93	
THD	18%	
Driver Efficiency	78%	

Load Compatibility



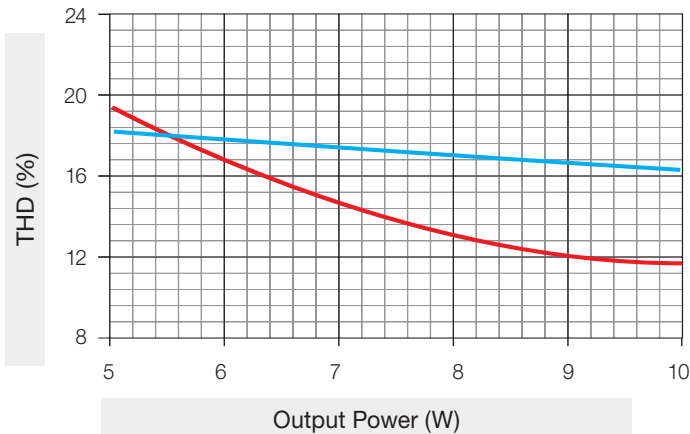
Key:   
■ Shaded area meets DLC Version 2.1 (areas outside of shaded areas may not meet THD or PF requirements).   
— Constant 5 W output — Constant 10 W output

Typical Efficiency vs. Output Current



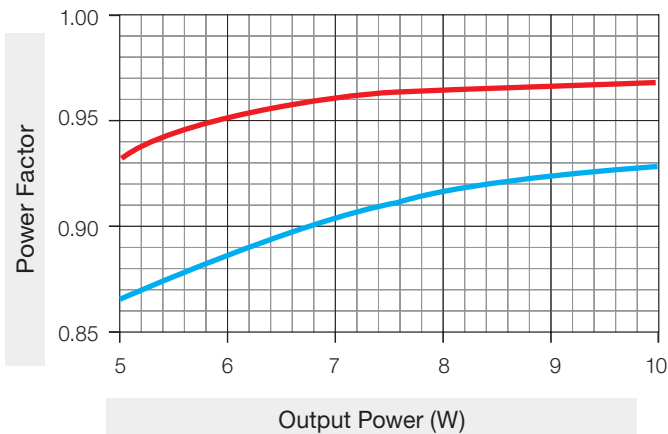
Key: — 120 V $\sim$  — 277 V $\sim$

Typical THD vs. Output Power



Key: — 120 V $\sim$  — 277 V $\sim$

Typical Power Factor vs. Output Power



Key: — 120 V $\sim$  — 277 V $\sim$

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

M-Case Models: “L” Output Range (continued)

Model number* LDE11U1UMN-	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~
-LA015	0.15	33.3	40.0	0.94/0.86	19%/17%	68%/66%	0.97/0.89	15%/17%	71%/71%
-LA016	0.16	31.3	40.0	0.94/0.87	19%/17%	69%/68%	0.97/0.9	14%/17%	72%/72%
-LA017	0.17	29.4	40.0	0.94/0.87	19%/17%	69%/68%	0.97/0.9	14%/16%	73%/73%
-LA018	0.18	27.8	40.0	0.94/0.87	18%/17%	69%/67%	0.97/0.91	13%/16%	73%/74%
-LA019	0.19	26.3	40.0	0.94/0.87	18%/17%	68%/67%	0.97/0.91	13%/16%	74%/75%
-LA020	0.20	25.0	40.0	0.94/0.87	18%/17%	68%/67%	0.97/0.92	12%/16%	75%/75%
-LA021	0.21	23.8	40.0	0.94/0.87	18%/17%	68%/67%	0.97/0.92	12%/16%	75%/76%
-LA022	0.22	22.7	40.0	0.94/0.87	18%/17%	68%/67%	0.97/0.93	11%/16%	76%/76%
-LA023	0.23	21.7	40.0	0.94/0.87	19%/17%	68%/67%	0.97/0.93	11%/16%	76%/77%
-LA024	0.24	20.8	40.0	0.94/0.87	18%/17%	68%/66%	0.97/0.93	12%/15%	77%/77%
-LA025	0.25	20.0	40.0	0.94/0.87	18%/17%	67%/66%	0.97/0.93	10%/15%	77%/78%
-LA026	0.26	20.0	38.5	0.94/0.88	18%/17%	68%/67%	0.97/0.93	10%/15%	77%/78%
-LA027	0.27	20.0	37.0	0.94/0.88	18%/17%	68%/67%	0.97/0.93	10%/15%	77%/77%
-LA028	0.28	20.0	35.7	0.94/0.89	17%/17%	69%/68%	0.97/0.93	10%/15%	77%/78%
-LA029	0.29	20.0	34.5	0.94/0.89	17%/17%	69%/68%	0.97/0.93	10%/15%	77%/77%
-LA030	0.30	20.0	33.3	0.95/0.89	15%/17%	69%/69%	0.97/0.93	10%/15%	76%/77%
-LA031	0.31	20.0	32.3	0.97/0.9	14%/16%	69%/69%	0.97/0.93	10%/15%	76%/77%
-LA032	0.32	20.0	31.3	0.97/0.9	14%/17%	70%/70%	0.97/0.93	10%/15%	76%/77%

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

Job Name: <input style="width: 90%; height: 20px;" type="text"/>	Model Numbers: <input style="width: 60%; height: 20px;" type="text"/> <input style="width: 35%; height: 20px;" type="text"/>	
Job Number: <input style="width: 80%; height: 20px;" type="text"/>	<input style="width: 60%; height: 20px;" type="text"/> <input style="width: 35%; height: 20px;" type="text"/>	