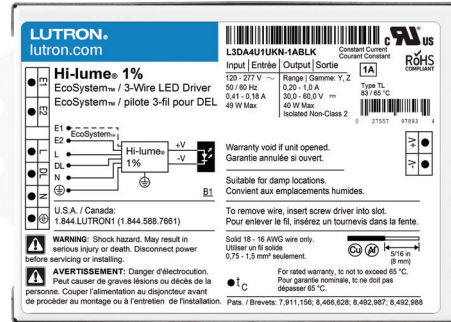


Hi-lume 1% EcoSystem/3-Wire L3D Driver Overview

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 @:
 - $t_c = 149^\circ\text{F}$ (65°C) for 40 W drivers
 - $t_c = 158^\circ\text{F}$ (70°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"/>	<input type="text"/>	<input type="text"/>
Job Number:	<input type="text"/>	<input type="text"/>	<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: 120–277 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 the maximum rated temperatures listed here.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: <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"/>

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

L3DA U1U -

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

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

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> A = 10.0 V–12.0 V* B = 12.5 V–20.0 V** C = 20.5 V–24.0 V** D = 24.5 V–38.0 V**</p> <p><u>Isolated Non-Class 2 Constant-Voltage</u> X = 38.5 V–60.0 V**</p>	<p><u>Class 2 Constant-Current</u> E = 0.20 A–0.50 A 30 V–54 V F = 0.51 A–1.00 A 30 V–54 V** G = 0.20 A–0.70 A 8 V–20 V H = 0.20 A–0.70 A 15 V–38 V I = 0.71 A–1.05 A 8 V–20 V J = 0.71 A–1.05 A 15 V–38 V K = 1.06 A–1.50 A 8 V–20 V L = 1.06 A–1.50 A 15 V–38 V** M = 1.51 A–2.10 A 8 V–19.9 V**</p> <p><u>Isolated Non-Class 2 Constant-Current</u> Y = 0.20 A–0.50 A 30 V–60 V Z = 0.51 A–1.00 A 30 V–60 V**</p>	<p>50 W Drivers</p> <p><u>Class 2 Constant-Current</u> N = 0.71 A–1.05 A 35 V–54 V**</p> <p><u>Isolated Non-Class 2 Constant-Current</u> 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: <input type="text"/>	Model Numbers: <input type="text"/>	
Job Number: <input type="text"/>	<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.

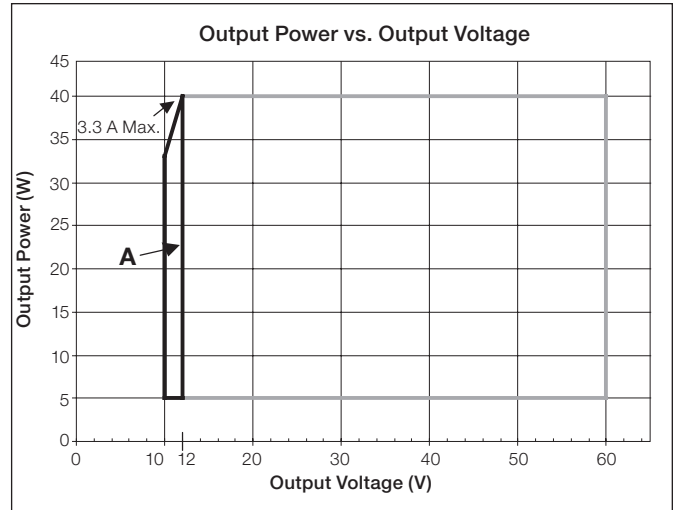
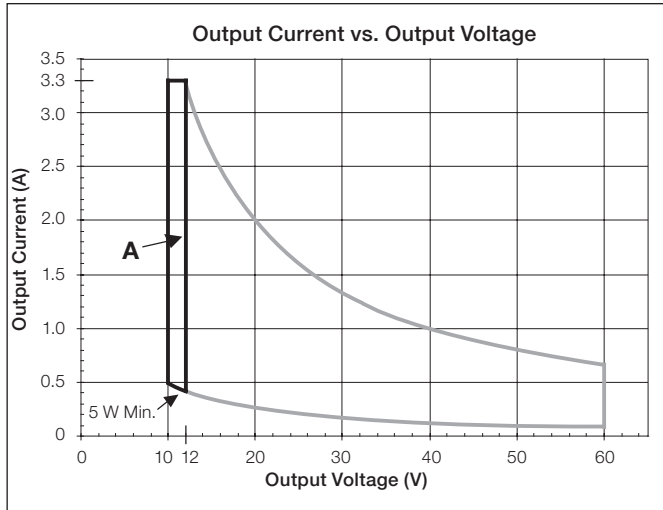
¹ QwikFig bulk drivers are only available as UL recognized.

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

“A” Output Range, Voltage Driver Models

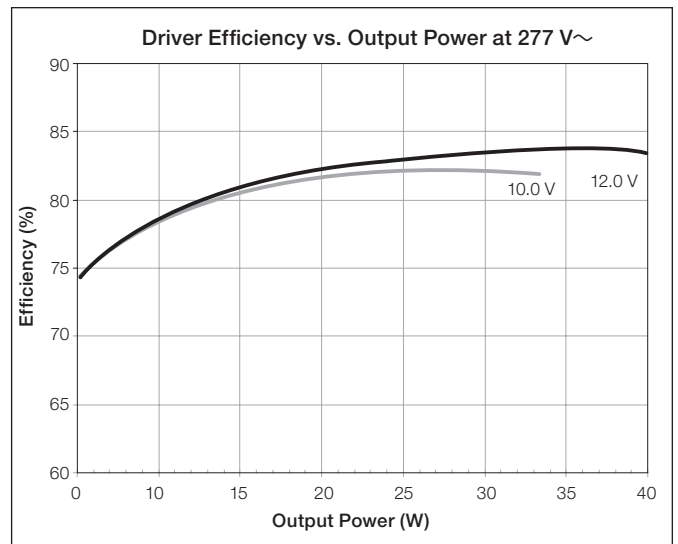
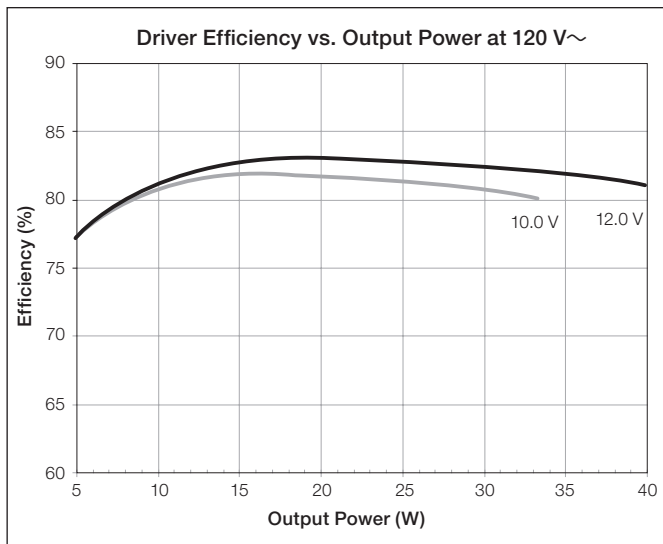
Driver Type	Output Dimming Method	Output Voltage	Output Current	Output Power	Standards Recognition	KL Case Option	Standards Recognition for KL Case
Constant-Voltage Driver (Class 2)	Pulse Width Modulation (PWM)	10.0–12.0 V PWM	0.42–3.3 A	5–40 W		Yes	

Voltage Driver Operation Range:





Typical Performance Specifications:

Parameter	120 V~	240 V~	277 V~	Test Conditions
Input Current	390 mA	210 mA	170 mA	t _a = 25 °C, 12.0 V 40 W load, Maximum Light Output, K-case
Power Factor	0.99	0.97	0.95	
THD	14%	17%	16%	
Driver Efficiency	81%	83%	83%	

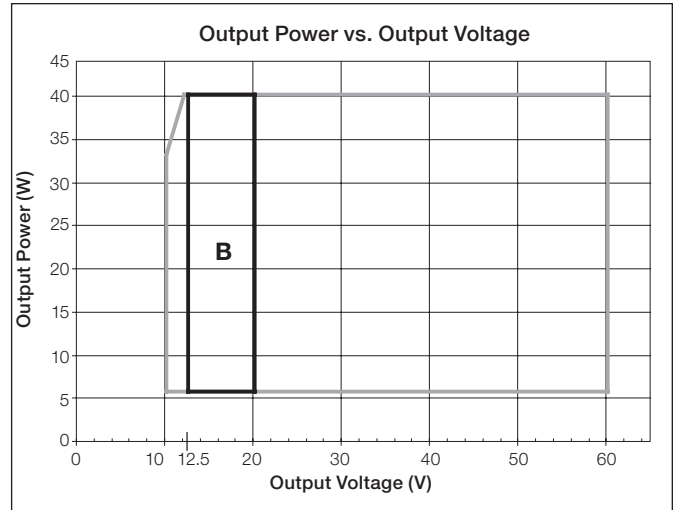
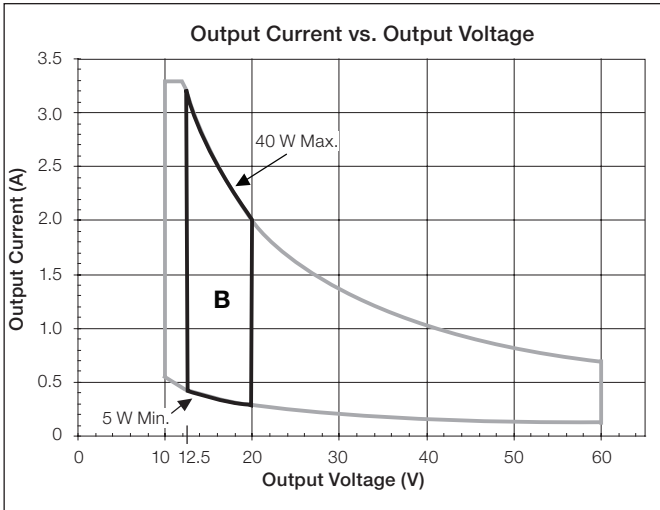


Job Name:	Model Numbers:	
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Job Number:	<input type="text"/>	<input type="text"/>

“B” Output Range, Voltage Driver Models

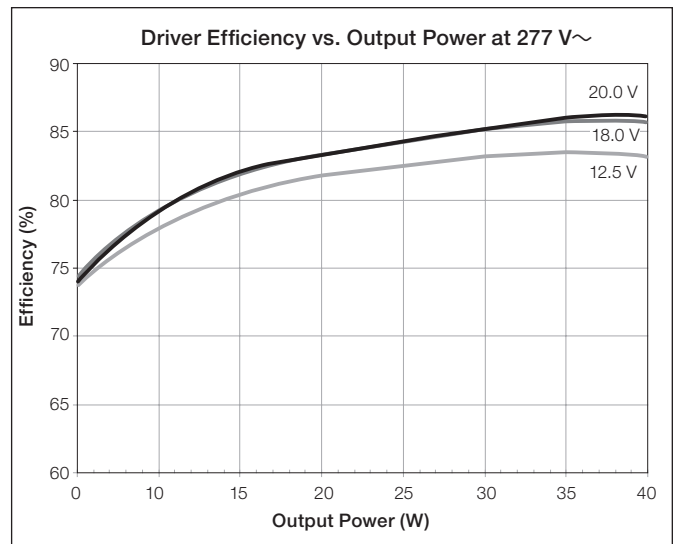
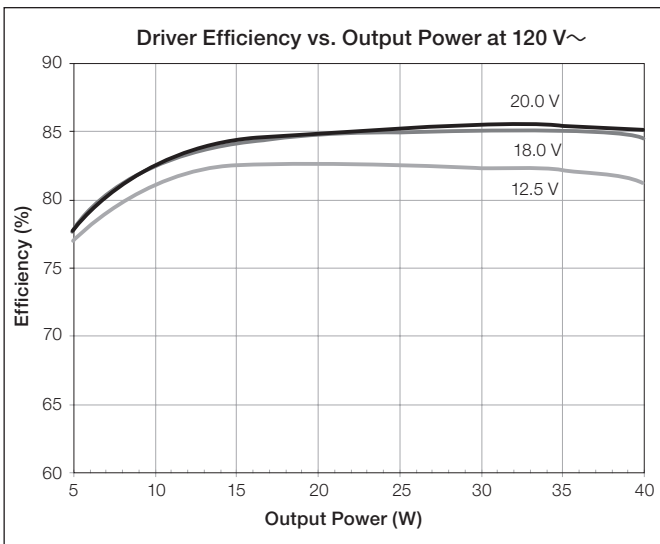
Driver Type	Output Dimming Method	Output Voltage	Output Current	Output Power	Standards Recognition	KL Case Option	Standards Recognition for KL Case
Constant-Voltage Driver (Class 2)	Pulse Width Modulation (PWM)	12.5–20.0 V PWM	0.25–3.2 A	5–40 W		Yes	

Voltage Driver Operation Range:





Typical Performance Specifications:

Parameter	120 V~	240 V~	277 V~	Test Conditions
Input Current	390 mA	200 mA	170 mA	$t_a = 25\text{ }^\circ\text{C}$, 20.0 V 40 W load, Maximum Light Output, K-case
Power Factor	0.99	0.98	0.97	
THD	10%	8%	9%	
Driver Efficiency	85%	86%	87%	

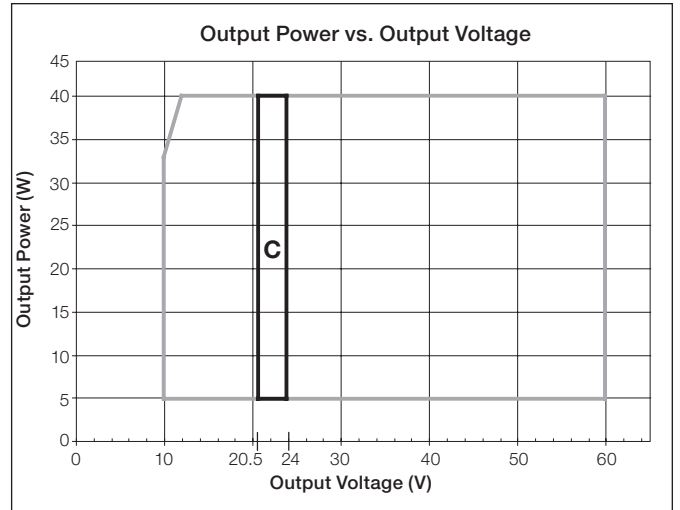
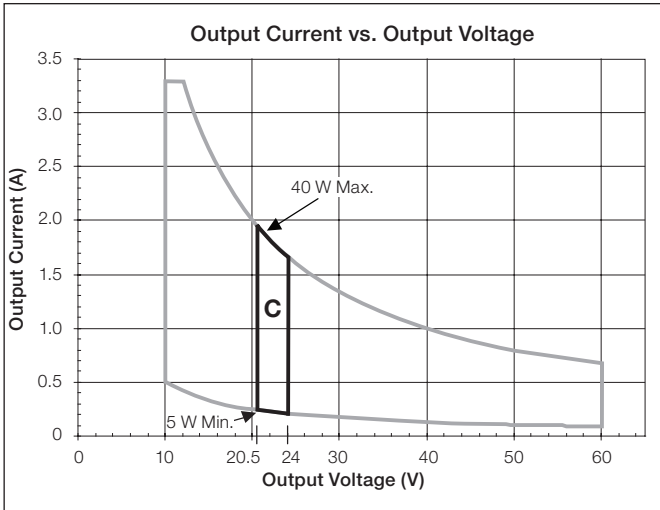


Job Name:	Model Numbers:	
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Job Number:	<input type="text"/>	<input type="text"/>

“C” Output Range, Voltage Driver Models

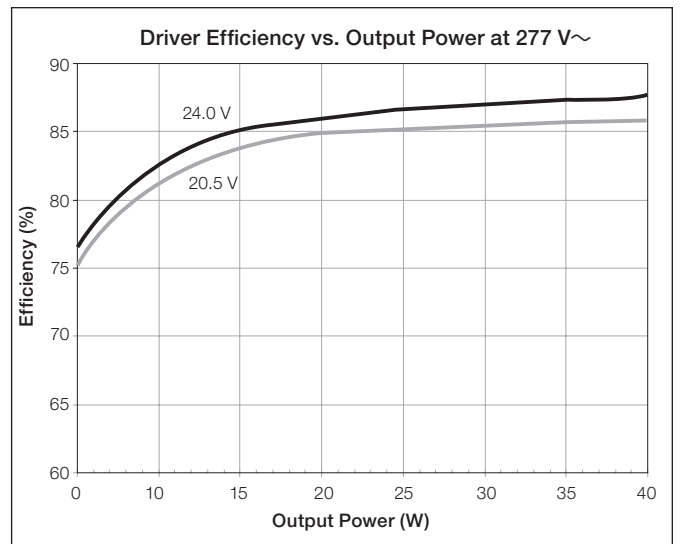
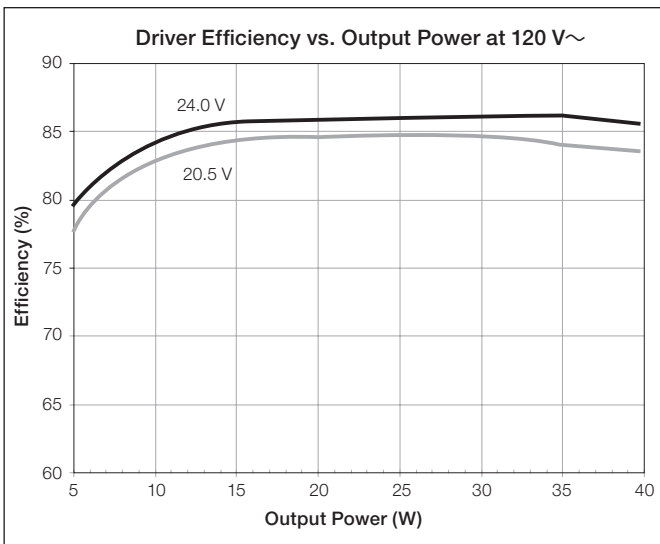
Driver Type	Output Dimming Method	Output Voltage	Output Current	Output Power	Standards Recognition	KL Case Option	Standards Recognition for KL Case
Constant-Voltage Driver (Class 2)	Pulse Width Modulation (PWM)	20.5–24.0 V PWM	0.21–1.95 A	5–40 W		Yes	

Voltage Driver Operation Range:





Typical Performance Specifications:

Parameter	120 V~	240 V~	277 V~	Test Conditions
Input Current	370 mA	190 mA	170 mA	t _a = 25 °C, 24.0 V 40 W load, Maximum Light Output, K-case
Power Factor	0.99	0.97	0.96	
THD	10%	10%	12%	
Driver Efficiency	86%	87%	88%	

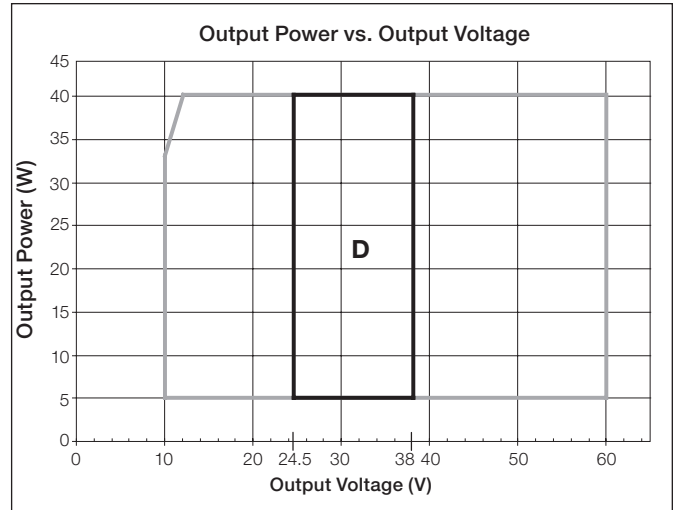
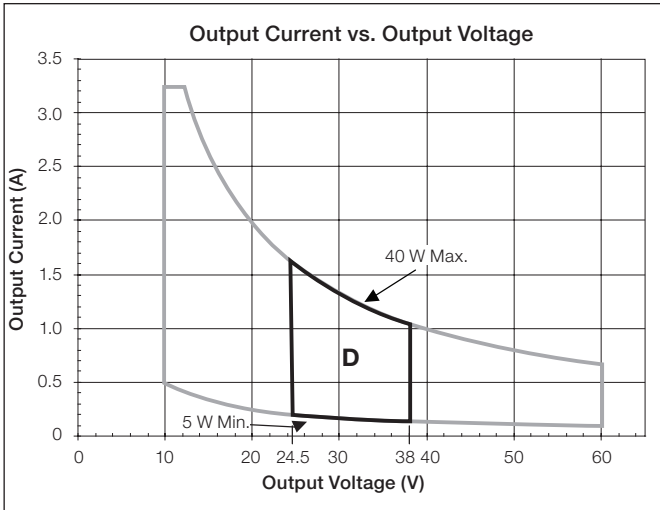


Job Name: <input style="width: 90%;" type="text"/>	Model Numbers: <input style="width: 95%;" type="text"/>
Job Number: <input style="width: 80%;" type="text"/>	<input style="width: 95%;" type="text"/>

“D” Output Range, Voltage Driver Models

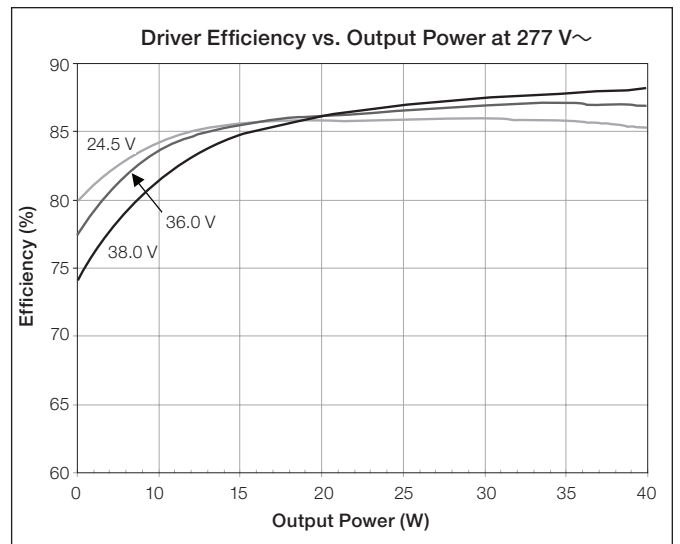
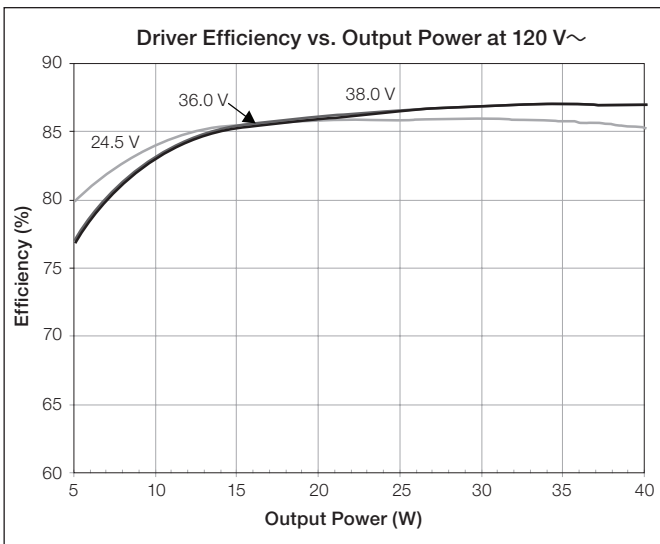
Driver Type	Output Dimming Method	Output Voltage	Output Current	Output Power	Standards Recognition	KL Case Option	Standards Recognition for KL Case
Constant-Voltage Driver (Class 2)	Pulse Width Modulation (PWM)	24.5–38.0 V PWM	0.13–1.63 A	5–40 W		Yes	

Voltage Driver Operation Range:





Typical Performance Specifications:

Parameter	120 V~	240 V~	277 V~	Test Conditions
Input Current	370 mA	190 mA	170 mA	$t_a = 25\text{ }^\circ\text{C}$, 38.0 V 40 W load, Maximum Light Output, K-case
Power Factor	0.99	0.98	0.98	
THD	6%	9%	11%	
Driver Efficiency	87%	88%	88%	



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

“E” Output Range, Current Driver Models

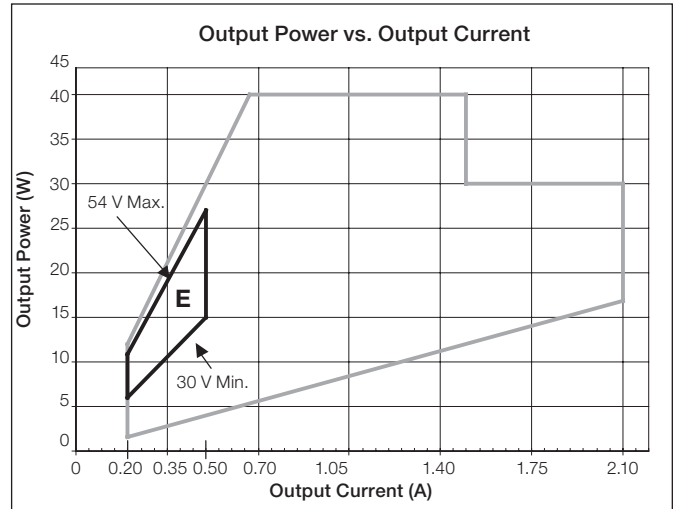
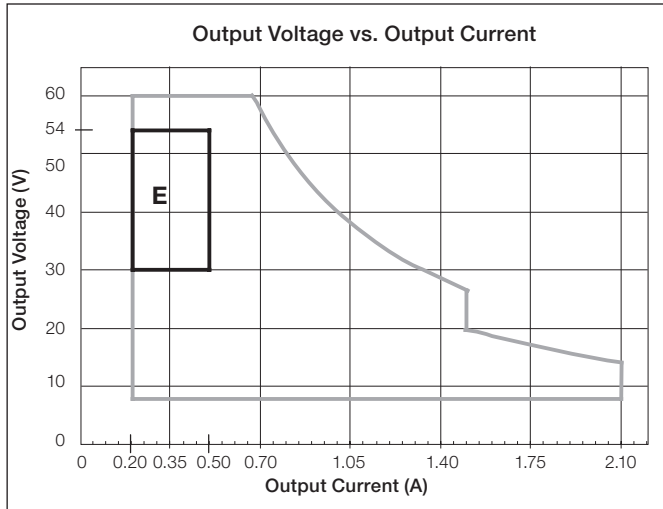
Driver Type	Output Dimming Method	Output Voltage	Output Current	Output Power	Standards Recognition	KL Case Option	Standards Recognition for KL Case
Constant-Current Driver (Class 2)	Constant-Current Reduction (CCR)	30–54 V $\overline{=}$	0.20–0.50 A	6–27 W	 Type TL 83 °/66 °C - K-case Type TL 90 °/72 °C - M-case	Yes	

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

K-case - L3DA4U1UKx-3ABLK*; M-case - L3DA4U1UMN-3ABLK

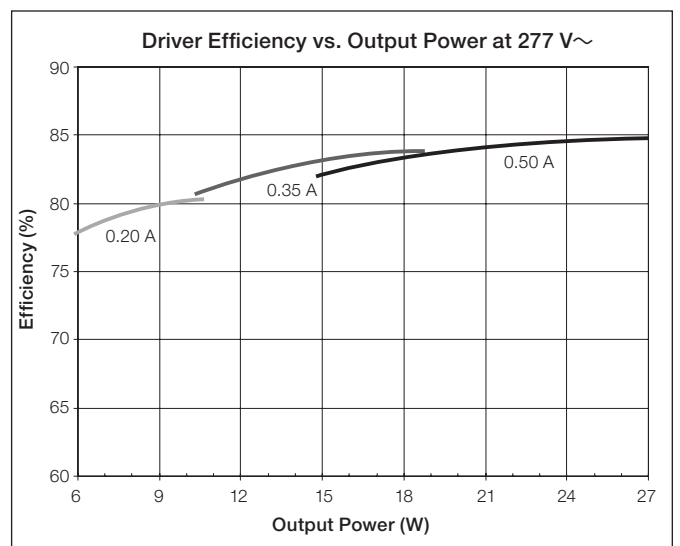
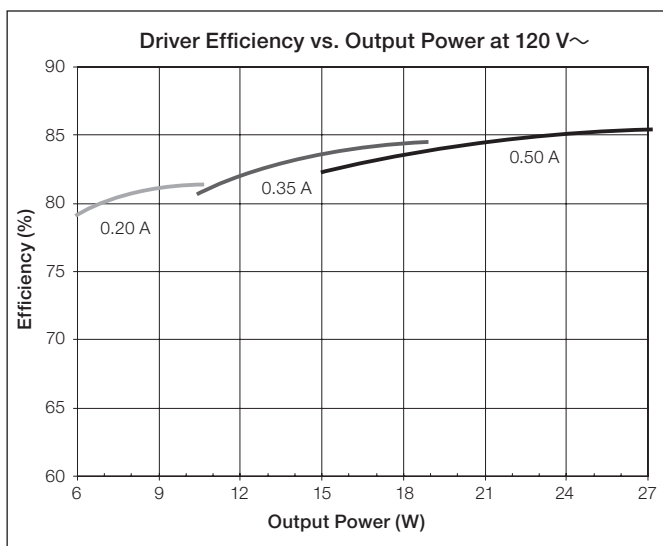
* x = studded (S) or non-studded (N)

Current Driver Operation Range:





Typical Performance Specifications:

Parameter	120 V \sim	240 V \sim	277 V \sim	Test Conditions
Input Current	260 mA	140 mA	110 mA	$t_a = 25^\circ\text{C}$, 0.50 A 27 W load, Maximum Light Output, K-case
Power Factor	0.99	0.98	0.96	
THD	10%	10%	12%	
Driver Efficiency	85%	85%	85%	



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

“F” 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)	Constant-Current Reduction (CCR)	30–54 V ^{***}	0.51–1.00 A	15–40 W	 Type TL 83 °/66 °C - K-case Type TL 90 °/72 °C - M-case	Yes	

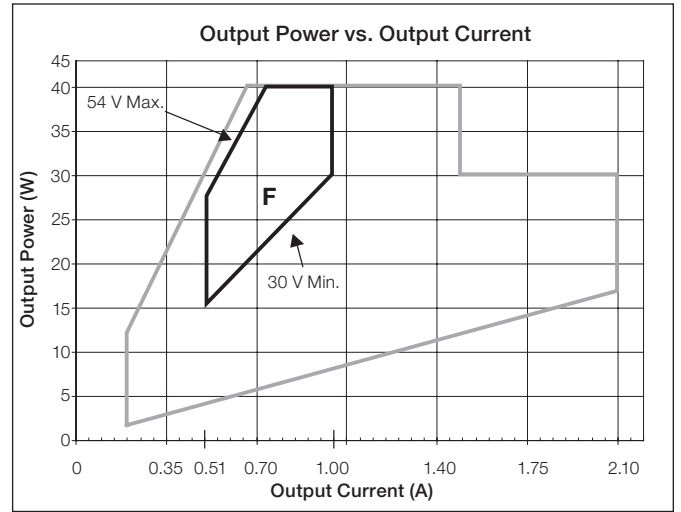
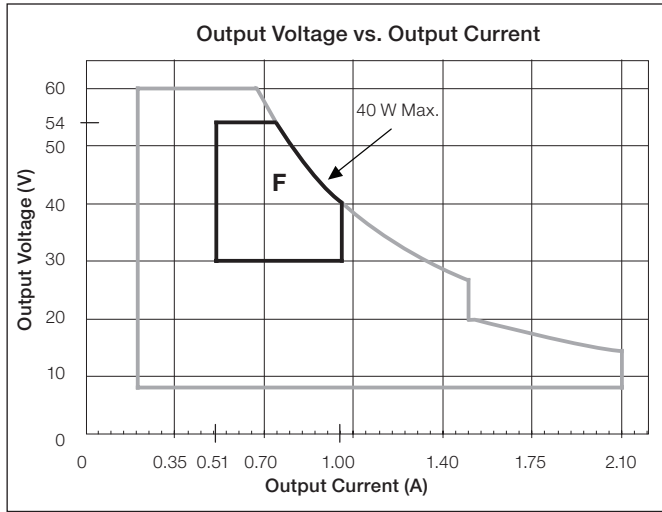
When using QwikFig technology, these models can be built from the following bulk units:

K-case - L3DA4U1UKx-3ABLK^{**}; M-case - L3DA4U1UMN-3ABLK

* Output parameter is power-limited for this output range. Consult detailed specifications on this page for the minimum and maximum voltage for each operating current.

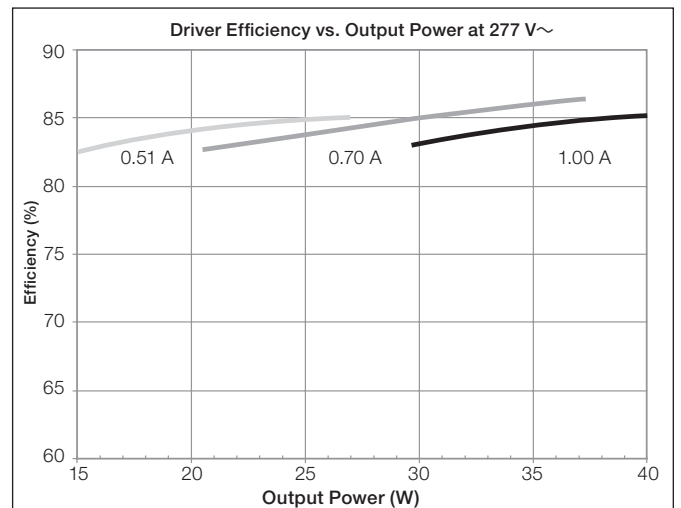
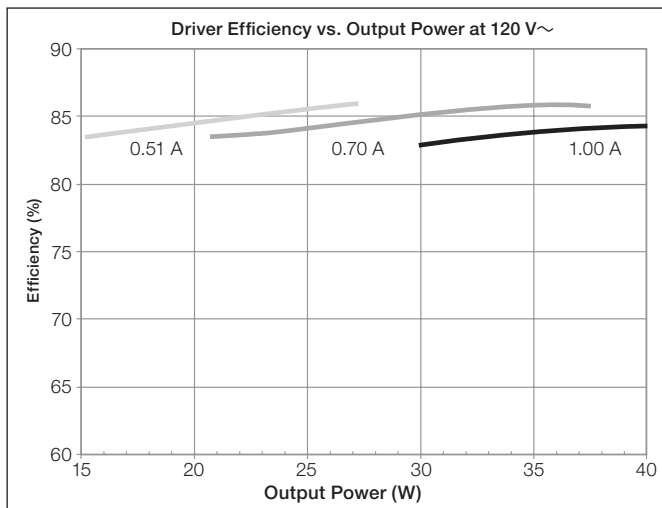
** x = studded (S) or non-studded (N)

Current Driver Operation Range:



Typical Performance Specifications:

Parameter	120 V~	240 V~	277 V~	Test Conditions
Input Current	380 mA	200 mA	160 mA	t _a = 25 °C, 1.00 A 40 W load, Maximum Light Output, K-case
Power Factor	0.99	0.99	0.98	
THD	8%	9%	11%	
Driver Efficiency	84%	86%	86%	



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