

# Universal & Universal+ Dimming LED Drivers

## Features & Product Data



	Universal	Universal+
12V & 24V models	✓	✓
DC dimming	✓	✓
Forward phase/TRIAC AC dimming	✓	✓
Reverse phase/ELV AC dimming		✓
High power factor		✓
Warranty	3 years	5 years

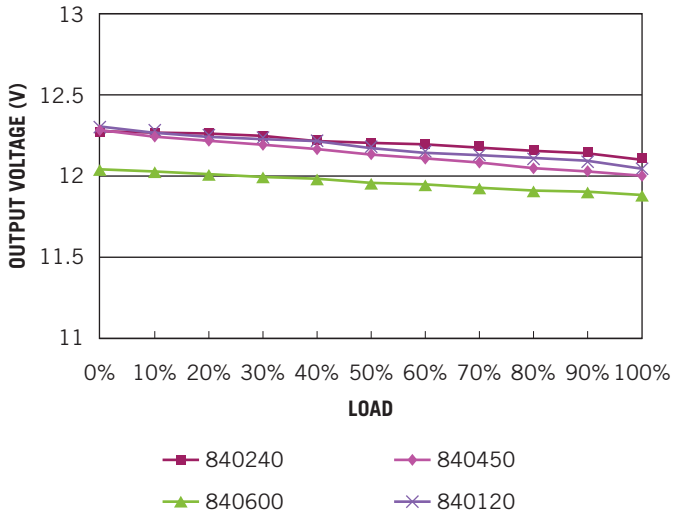
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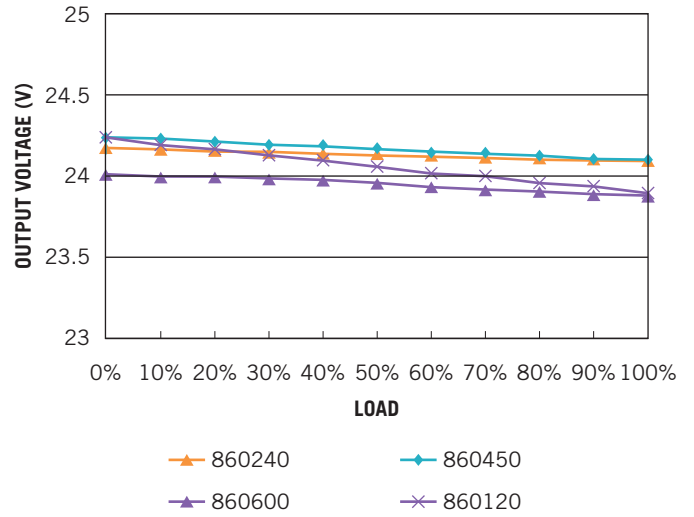
MODEL		840240 UL CLASS 2	860240 UL CLASS 2	840450 UL CLASS 2	860450 UL CLASS 2	840600 UL CLASS 2	860600 UL CLASS 2	841200 UL 1012	861200 UL 1012
<b>DIMMING</b>	Dimming Technology	PWM							
	Load Requirement	1W – 24W		1W – 45W		3W – 60W		24W – 120W	
	Dimming Range (Standard Triac)	5% – 100%				10% – 100%		20% – 100%	
	Dimming Range (Lutron CL)	0% – 100%							
	Rated PWM Dimming Frequency	400Hz				600Hz			
<b>OUTPUT</b>	DC Voltage	12V	24V	12V	24V	12V	24V	12V	24V
	Rated Current	2A	1A	3.75A	1.87A	5A	2.5A	10A	5A
	Rated Power	24W		45W		60W		120W	
	Voltage Tolerance	+/-0.5V							
	Start-up Time (Typ.)	350ms				500ms		600ms	
<b>INPUT</b>	Voltage Range	100 – 120VAC				100 – 130VAC			
	Frequency Range	47 – 63Hz				50 – 60Hz			
	Efficiency (Typ.)	80%	81%		82%	85%		83%	86%
	AC Current (Typ.)	0.52A	0.50A	0.99A	0.97A	1A		2A	
	Inrush Current (Typ.)	6.5A / 120VAC	6.5A / 120VAC	8A / 120VAC	8A / 120VAC	15A / 120VAC		30A / 120VAC	
	Leakage current	<0.7mA / 120VAC				<0.5mA/120VAC			
<b>GUARDS</b>	Over Current	Hiccup mode, auto-recovery upon removal of fault condition							
	Short Circuit	Hiccup mode, auto-recovery upon removal of fault condition							
	Over Temperature	Shut down, auto-recovery							
<b>ENVIRO.</b>	Ta	4°F (-20°C) to 104°F (40°C)							
	Working Humidity	20 – 90% relative humidity, non-condensing							
	Storage Temp. & RH	-40°F (-40°C) to 176°F (80°C), 10 – 95% relative humidity							
	Vibration	10 – 500Hz, 2G 10min./1 cycle, period for 60min. each along X, Y, Z axes							
<b>SAFETY &amp; EMC</b>	Safety Standards	UL Std. 1310 and 8750, Cert. to CAN/CSA Std. C22.2 No. 223-M91 and C22.2 No. 250.13; Class 2 LED power supply, ETL Listed for dry and damp location use						UL 1012, CSA C22.2 No.107.1; ETL Listed for wet location use	
	Withstand Voltage	I/P – O/P: 1.2KVAC				I/P – O/P: 3.75KVAC			
	Isolation Resistance	I/P – O/P: 100M Ohms / 500VDC / 25°C / 70% RH							
	EMC Emission	Compliance to FCC Part 15B (>=50% loading)							
<b>OTHER</b>	MTBF	318.5K hrs min. (25°C, MIL-HDBK-217F)		292K hrs min. (25°C, MIL-HDBK-217F)		284K hrs min. (25°C, MIL-HDBK-217F)		280K hrs min. (25°C, MIL-HDBK-217F)	
	Cooling	Free air convection							
	Life Time*	30,000 hours						20,000 hours	
	Case	Fully isolated polycarbonate plastic case with built in terminal block for direct-wire connections						IP66 aluminum case with flying leads	
	Dimensions	6.10 L x 2.13 W x 0.79 in. H (155mm L x 54mm W x 20mm H)		7.09 L x 2.4 W x 0.98 in. H (180mm L x 61mm W x 25mm H)		7.09 L x 2.36 W x 1.38 in. H (180mm L x 60mm W x 35mm H)		10.12 L x 3.07 W x 1.89 in. H (257mm L x 78mm W x 48mm H)	

\*Note: Life time tested under adverse operating conditions with ambient air temperature at 104°F and under full wattage load, failure rate <10%.

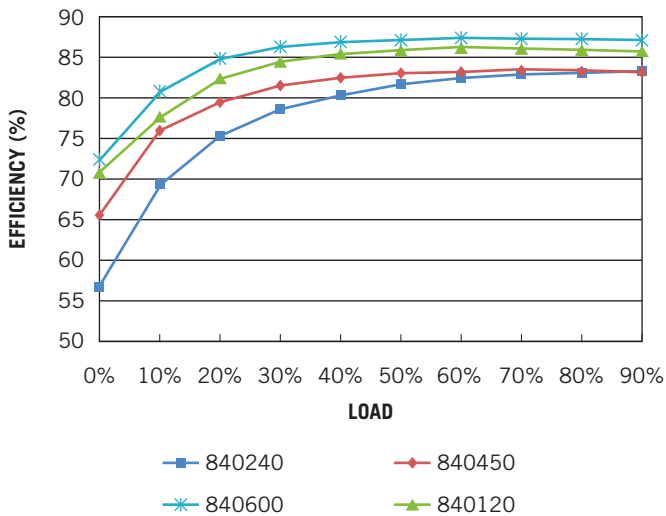
**OUTPUT VOLTAGE VS LOAD (1)**



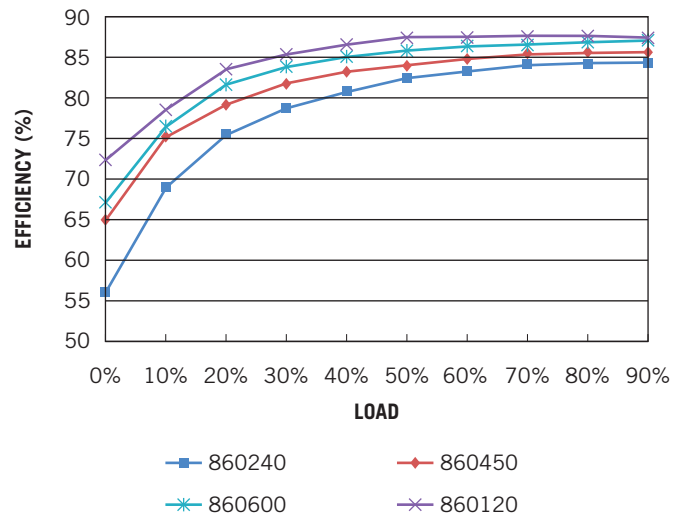
**OUTPUT VOLTAGE VS LOAD (2)**



**EFFICIENCY VS LOAD (1)**



**EFFICIENCY VS LOAD (2)**



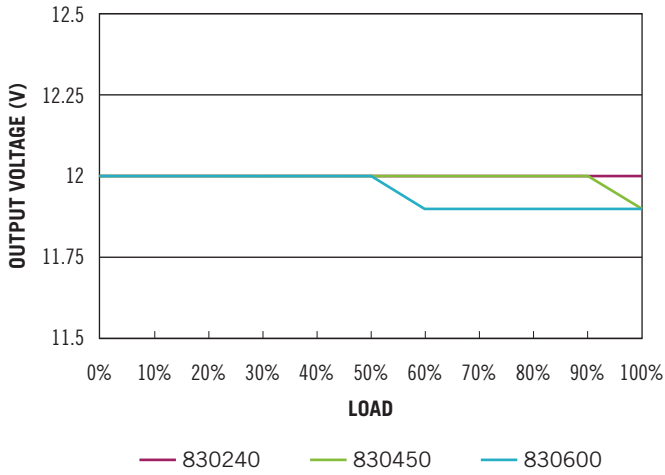
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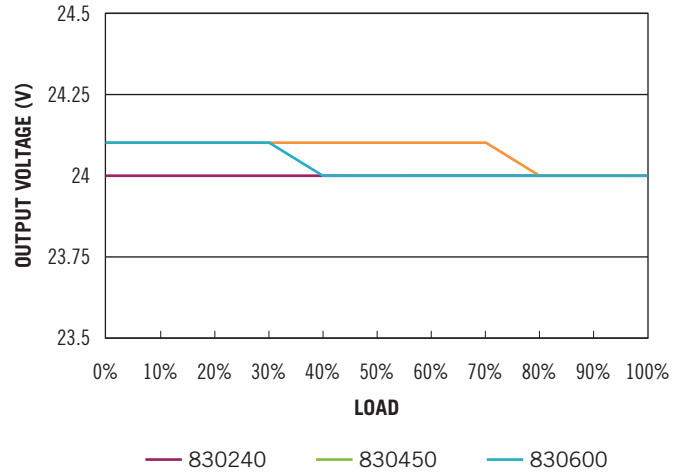
MODEL		830240 UL CLASS 2	870240 UL CLASS 2	830450 UL CLASS 2	870450 UL CLASS 2	830600 UL CLASS 2	870600 UL CLASS 2
<b>DIMMING</b>	Dimming Technology	PWM					
	Load Requirement	1W – 24W		1W – 45W		1W – 60W	
	Dimming Range (Standard Triac)	5% – 100%					
	Dimming Range (Lutron CL)	0% – 100%					
	Dimming Range (ELV)	5% – 100%					
	Rated PWM Dimming Frequency	400Hz					
<b>OUTPUT</b>	DC Voltage	12V	24V	12V	24V	12V	24V
	Rated Current	2A	1A	3.75A	1.87A	5A	2.5A
	Rated Power	24W		45W		60W	
	Voltage Tolerance	+/-0.5V					
	Start-up Time (Typ.)	1S					
<b>INPUT</b>	Voltage Range	100 – 120VAC					
	Frequency Range	50/60Hz					
	AC Current (Typ.)	0.52A	0.50A	0.99A	0.97A	1.1A	1.1A
	Efficiency (Typ.)	79%	79%	80%	80%	83%	83%
	Power Factor (Typ.)	0.98 @ 120VAC and full load					
	Inrush Current (Typ.)	7A / 120VAC		14A / 120VAC		16A / 120VAC	
	Leakage current	<0.5mA/120VAC					
<b>GUARDS</b>	Over Current	Shut down, auto-recovery upon removal of fault condition					
	Short Circuit	Shut down, auto-recovery upon removal of fault condition					
	Over Temperature	Shut down, auto-recovery after cooling down					
<b>ENVIRO.</b>	Ta	4°F (-20°C) to 104°F (40°C)					
	Working Humidity	20 – 90% relative humidity, non-condensing					
	Storage Temp. & RH	-40°F (-40°C) to 176°F (80°C), 10 – 95% relative humidity					
	Vibration	10 – 500Hz, 2G 10min./1 cycle, period for 60min. each along X, Y, Z axes					
<b>SAFETY &amp; EMC</b>	Safety Standards	UL Std. 8750, CAN/CSA Std. C22.2 No. 250.13; Class 2 power supply, ETL Listed for dry and damp location use					
	Withstand Voltage	I/P – O/P: 1.2KVAC					
	Isolation Resistance	I/P – O/P: 100M Ohms / 500VDC / 25°C / 70% RH					
	EMC Emission	Compliance to FCC Part 15B (>=50% loading)					
<b>OTHER</b>	MTBF	324K hrs min. (25°C, MIL-HDBK-217F)					
	Cooling	Free air convection					
	Life Time*	50,000 hours					
	Case	Fully isolated polycarbonate plastic case with built in terminal block for direct-wire connections					
	Dimensions	6.10 L x 2.13 W x 0.79 in. H (155mm L x 54mm W x 20mm H)		7.09 L x 2.4 W x 0.98 in. H (180mm L x 61mm W x 25mm H)		7.09 L x 2.4 W x 0.98 in. H (180mm L x 61mm W x 25mm H)	

Note: All parameters NOT specially mentioned are measured at 120VAC input, rated load and 77°F (25°C) of ambient temperature.  
\* Life time with failure rate of <10%.

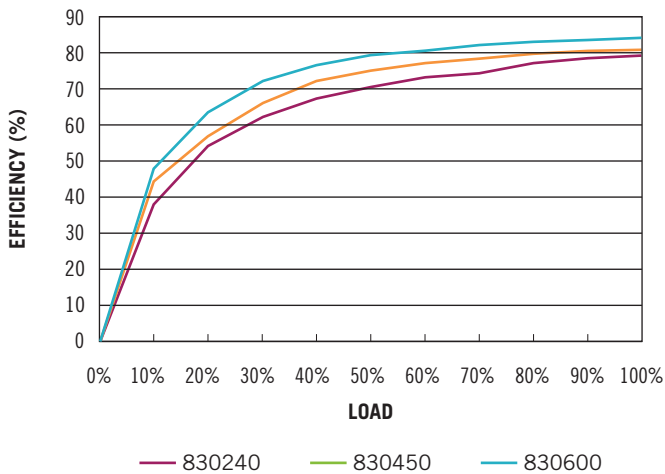
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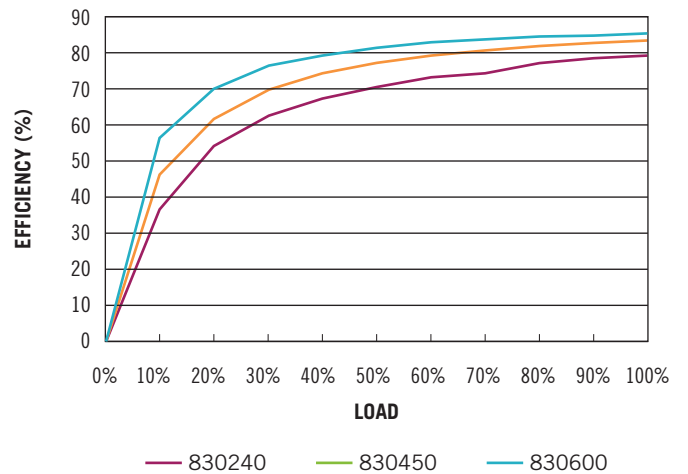
**OUTPUT VOLTAGE VS LOAD (2)**



**EFFICIENCY VS LOAD (1)**



**EFFICIENCY VS LOAD (2)**



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