

# Dimmable LED Drivers

SMALL | SMART | CONNECTED™

Revision: September 2017

# Our Target Markets



- Indoor Residential and Commercial lighting



- Outdoor street and area lighting



- Office lighting



- Warehouses, manufacturing facilities, and Large retail store application



- Parking garages



- Architectural lighting



- Display / Signage



- Stage Lighting (entertainment, concert)

# About ERP

ERP designs and manufactures energy-efficient LED drivers/power supplies for a wide range of lighting applications: from residential to commercial, industrial, outdoor, office buildings, architectural and stage lighting. Small, yet powerful, ERP products deliver an industry-leading combination of compact size, extensive dimmer compatibility, and high efficiency at competitive cost. Headquartered in Moorpark, CA, ERP owns and operates its own ISO 9001 certified manufacturing facility to ensure quality of design, sourcing, production and testing.

- **Industry leader in high-efficiency (high-power-saving) & high-density (small footprint) LED drivers/power supplies**
- **Product offerings include standard and custom solutions for LED Lighting**
- **U.S.A. Headquarters in Moorpark, California, with sales/marketing, R&D, and technical support to serve the North-American market**
- **China Operations Center in Zhuhai include document center, QA, R&D, manufacturing, and sales / technical support to serve China and Asia**

# Our Presence



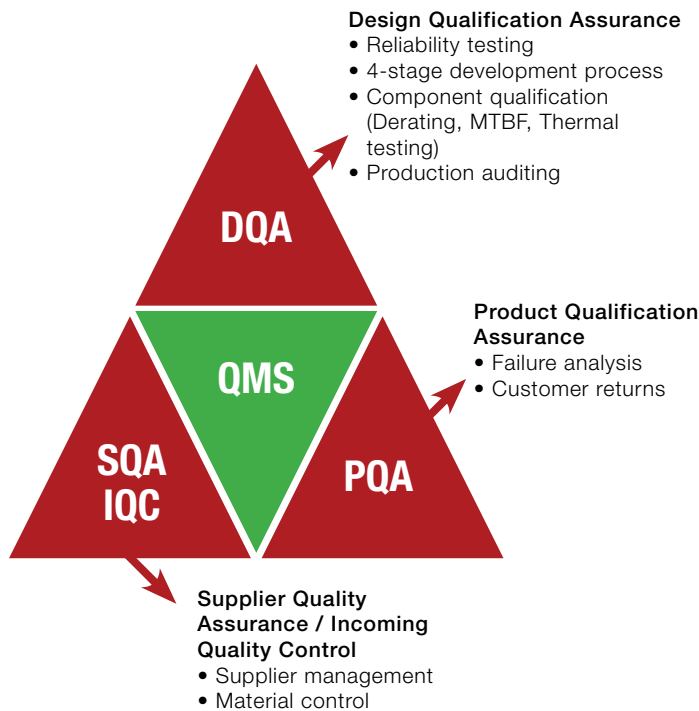
# ERP Manufacturing

ERP products are manufactured in our wholly owned manufacturing facility in Zhuhai, China. The factory is configured with high-speed production lines for LED drivers and high-density power supplies, as well as state of the art burn-in chambers and automated test equipment. Strategic manufacturing partners provide significant upside capabilities. ERP products go through 100% burn-in to eliminate “infant mortality” failures. ISO 9001:2008 certified, with regular audits by safety agencies.



# ERP Quality

## Quality Management Systems (QMS)



## Standard Certifications

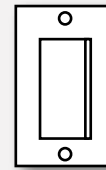
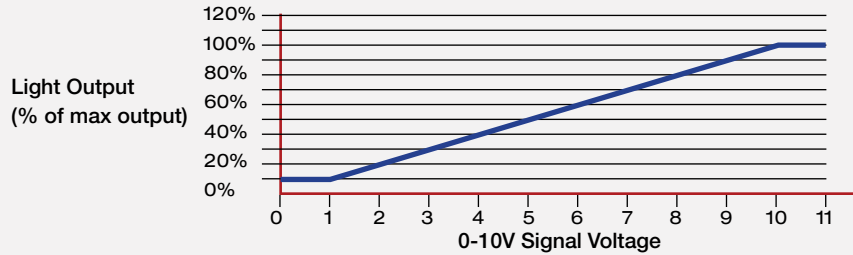
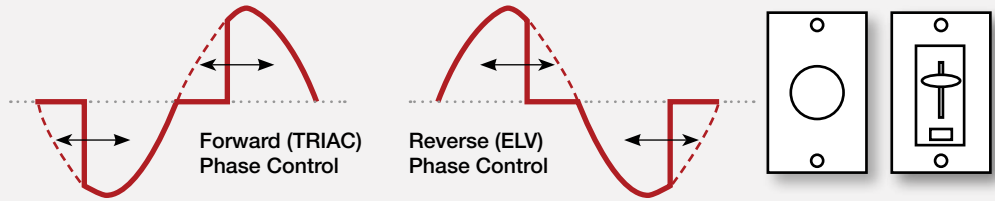
ERP products are designed and manufactured to comply with worldwide international IEC standards for lighting applications, and carry certifications by safety agencies such as UL, CSA and Nemko.

ERP products also comply with EMC regulations from Europe, and FCC/ICES in North America.



# Best-In-Class Dimming

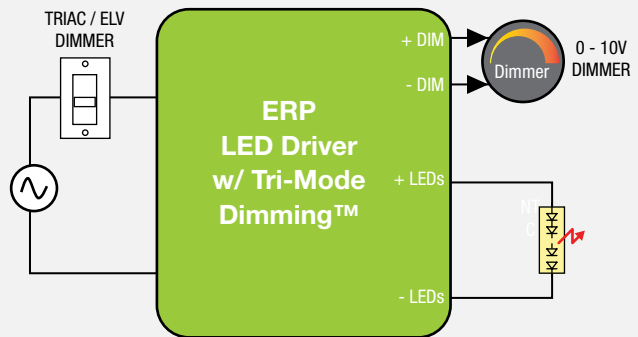
Forward-phase (TRIAC or leading-edge) and reverse-phase (ELV or trailing-edge)



0-10V control

## Tri-Mode Dimming™

The ESS, ESP, ESM, EVM, and EVB series of LED drivers are compatible with Tri-Mode Dimming™ from 6 W up to 160 W, i.e. they are compatible with forward-phase (TRIAC or leading-edge), reverse-phase (ELV or trailing-edge) and 0-10 V dimmers.



## Broad Dimming Compatibility

ERP LED drivers deliver an extensive dimmer compatibility. For each LED driver, a dimming compatibility matrix is available upon request, showing how the LED driver scores against a long list of dimmers according to several criteria such as: flicker, shimmer, smooth dimming, no flash at startup, etc...

# Power Density

## Highest Power Density in the industry

The new patent-pending power electronics design delivers more than double the density of the previous generation ERP platform, while delivering 5 times the power density of current industry competitors.



# LED Cross-Reference

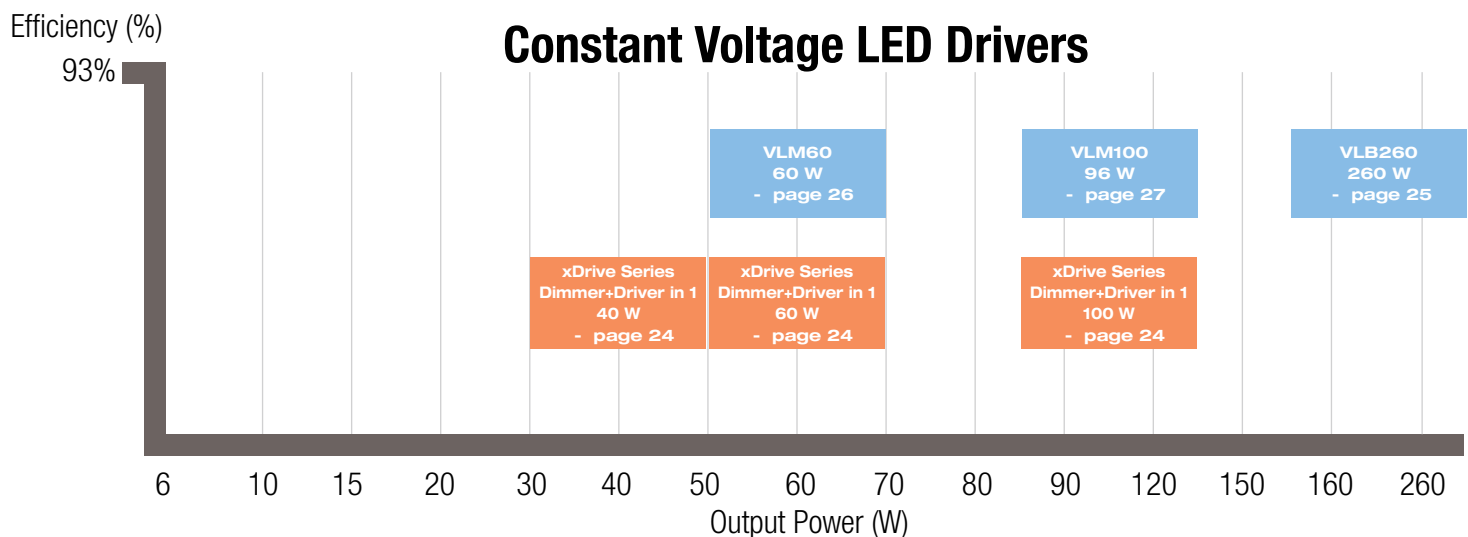
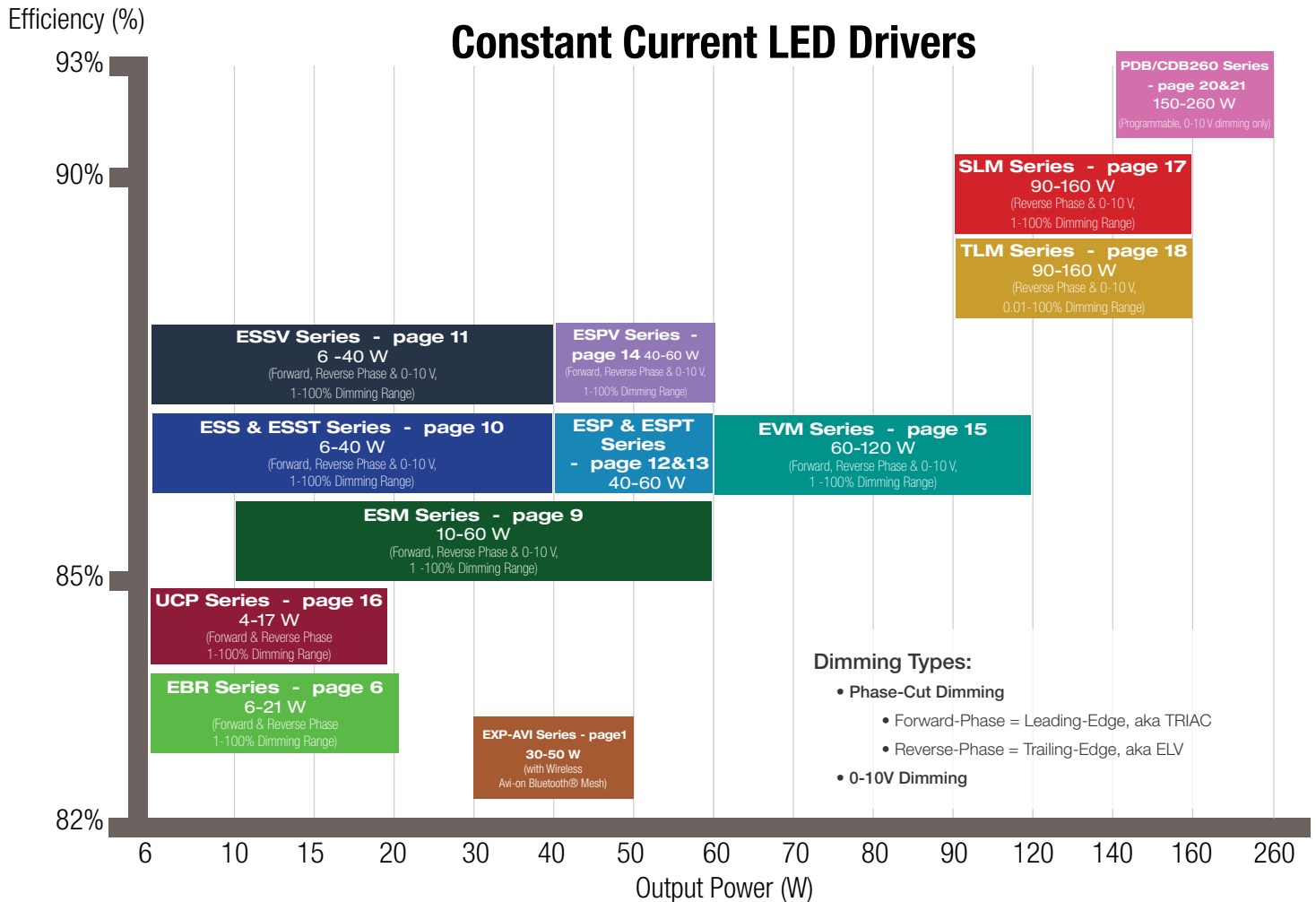
ERP has developed an extensive cross-reference for 12 different LED manufacturers. This cross-reference can be directly accessed from the ERP website at [www.erp-power.com](http://www.erp-power.com). On the homepage, using the pull-down menus, select the LED manufacturer and then the LED. You may also select your desired drive current. The cross-reference tool will return a list of driver(s) that are the most relevant for your LED selection. You can also access the cross-reference by clicking on **LED GUIDE** at the top of the homepage. The LED guide lists the 12 LED manufacturers whose LEDs have been cross referenced to some of our LED drivers.

	<p><b>CITIZEN</b></p>	
		
	<p><b>PHILIPS LUMILEDS</b></p>	
	<p><b>SHARP</b></p>	<p><b>XICATO</b> AUTHORIZED DISTRIBUTOR</p>
<p>lumenetix<sup>®</sup></p>		



# ERP Constant Current and Constant Voltage LED Driver Portfolios

Below are two graphs that illustrate our portfolio of constant current and constant voltage LED drivers. ERP LED drivers are targeted at architectural, commercial and industrial applications requiring 10 W to 260 W of power with dimming, programming and connectivity to the Internet of Lights. The color coded drivers are represented in this brochure and include page number references.

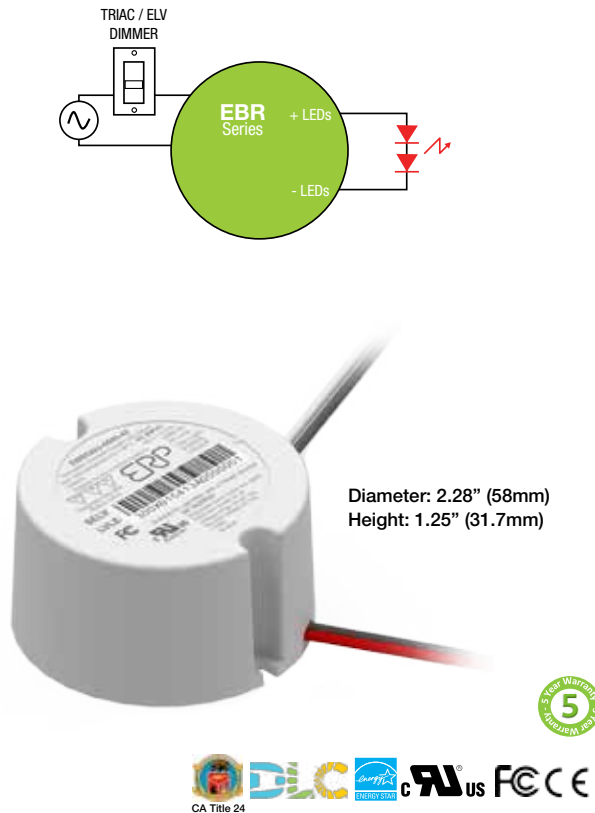


# EBR SERIES 8 W - 21 W

Constant Current LED Drivers with Deep TRIAC and ELV Dimming (1% to 100%) and with Fast Startup Time

Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 Vac, 220 - 240 Vac	21 W	16 to 42 Vdc	200 to 700 mA Constant Current	up to 87% typical	90°C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase	1 to 100% (% of Iout)	150 ms typical

## Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Iout (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
<b>120 VAC NOMINAL VOLTAGE</b>					
<b>EBR010U: 8 to 10 W</b>					
EBR010U-0200-42	120	200	8.4	30	42
EBR010U-0250-42	120	250	10.5	30	42
EBR010U-0440-24	120	440	10.6	16	24
EBR010U-0700-14	120	700	9.8	9	14
<b>EBR015U: 11 to 15 W</b>					
EBR015U-0300-42	120	300	12.6	30	42
EBR015U-0350-32	120	350	11.2	21	32
EBR015U-0350-42	120	350	14.7	30	42
EBR015U-0440-36	120	440	15.8	24	36
EBR015U-0500-28	120	500	14.0	20	28
<b>EBR020U: 16 to 21 W</b>					
EBR020U-0400-42	120	400	16.8	30	42
EBR020U-0460-42	120	460	19.3	30	42
EBR020U-0500-32	120	500	16.0	21	32
EBR020U-0500-37	120	500	18.5	25	37
EBR020U-0500-42	120	500	21.0	30	42
EBR020U-0700-24	120	700	16.8	16	24
EBR020U-0700-30	120	700	21.0	20	30
EBR020U-0720-21	120	720	15.1	14	21
EBR020U-0720-28	120	720	20.2	19	28
<b>220 TO 240 VAC NOMINAL INPUT VOLTAGE</b>					
<b>EBR010E: 8 to 10 W</b>					
EBR010E-0200-42	220 to 240	200	8.4	30	42
EBR010E-0250-42	220 to 240	250	10.5	30	42
<b>EBR015E: 11 to 15 W</b>					
EBR015E-0350-42	220 to 240	350	14.7	30	42
EBR015E-0440-36	220 to 240	440	15.8	24	36
<b>EBR020E: 16 to 21 W</b>					
EBR020E-0400-42	220 to 240	400	16.8	30	42
EBR020E-0500-42	220 to 240	500	21.0	30	42

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

## Features

- Compatible with industry standard TRIAC (forward-phase or leading-edge), and ELV (reverse-phase or trailing-edge) phase-cut dimmers
- Lifetime: 50,000 hours at 70°C case temperature
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B at 120 Vac and EN55015 (CISPR 15) at 220 to 240 Vac
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- IP20-rated case with silicone-based potting
- 94V-0 flammability rating (5VA available upon request)
- 90°C maximum case temperature
- Class 2 power supply

## Applications

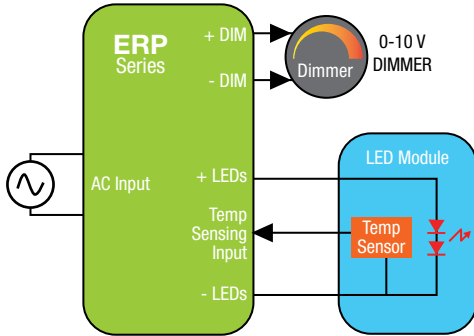
- Recessed lighting (downlights)
- Commercial & Residential lighting
- Architectural lighting





Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range
120 to 277 Vac	40 W	16 to 54.5 Vdc	350 to 1400 mA Constant Current	up to 90% typical	90°C (measured at the hot spot)	< 20%	> 0.9	0-10 V	10 to 100%

### Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	I <sub>out</sub> (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
<b>ERP020W: 10 to 20 W</b>					
ERP020W-0350-28	120 to 277	350	9.8	21	28
ERP020W-0350-54.5	120 to 277	350	19.1	41	54.5
ERP020W-0450-42	120 to 277	450	18.9	31.5	42
ERP020W-0700-23.5	120 to 277	700	16.5	17.5	23.5
ERP020W-0720-24.5	120 to 277	720	17.6	18	24.5
<b>ERP030W: 21 to 30 W</b>					
ERP030W-0500-42	120 to 277	500	21.0	31.5	42
ERP030W-0500-54.5	120 to 277	600	27.3	41	54.5
ERP030W-0600-42	120 to 277	600	25.2	31.5	42
ERP030W-0700-32	120 to 277	700	22.4	22.5	32
ERP030W-0700-38.5	120 to 277	700	27.0	29	38.5
<b>ERP040W: 31 to 40 W</b>					
ERP040W-0700-45.5	120 to 277	700	31.9	34	45.5
ERP040W-0900-42	120 to 277	900	37.8	31.5	42
ERP040W-1050-38	120 to 277	1050	39.9	28.5	38
ERP040W-1400-24.5	120 to 277	1400	32.9	17.4	23.5

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

### Features

**NOT RECOMMENDED FOR NEW DESIGNS. FOR NEW DESIGNS, USE THE ESS SERIES.**

- High power density of 8.5 W/in<sup>3</sup>
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC part 15 Class B (120 Vac) Class A (277 Vac) and EN55015 (CISPR 15) at 220 to 240 Vac
- Complies with ENERGY STAR® luminaire specification
- IP64-rated case with silicone-based potting
- Lifetime: 50,000 hours at 70°C case temperature
- 90°C maximum case temperature
- Class 2 power supply

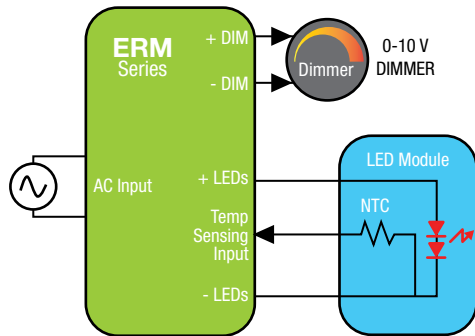
### Applications

- Commercial lighting
- Residential lighting
- Architectural lighting
- Tunnels and street lighting
- Wide-area downlights



Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range
120 & 277 Vac	70 W	21 to 82 Vdc	700 to 2100 mA Constant Current	up to 90% typical	90°C (measured at hot spot)	< 20%	> 0.9	0-10 V	10 to 100%

### Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	I <sub>out</sub> (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
ERM050W: 40 to 50 W					
ERM050W-1050-42	120 & 277	1050	44.1	32	42
ERM050W-1200-42	120 & 277	1200	50.4	32	42
ERM050W-1800-28	120 & 277	1800	50.4	21	28
ERM060W: 51 to 70 W					
ERM060W-0700-82 <sup>(1)</sup>	120 & 277	700	57.4	62	82
ERM060W-1400-42	120 & 277	1400	58.8	32	42
ERM060W-1600-42	120 & 277	1600	67.2	32	42
ERM060W-1750-40	120 & 277	1750	70	30	40
ERM060W-2100-28	120 & 277	2100	58.8	21	28

1. Not Class 2

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)



### Applications

- High Bay Lights
- Troffers
- Outdoor LED Lighting
- Office LED Lighting
- Industrial LED Lighting
- High current COB LEDs

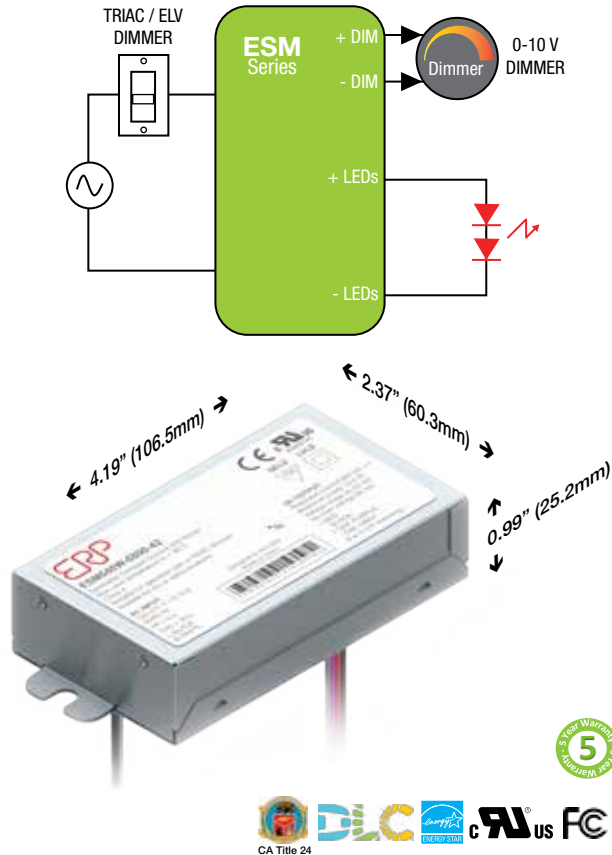


### Features

- Very High power density in the market: 8.2 W/in<sup>3</sup>
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: FCC CFR Title 47 Part 15 compliant with Class B at 120 Vac and Class A at 277 Vac
- Complies with ENERGY STAR® luminaire specification and with DLC (Design Light Consortium®) technical requirements
- IP64-rated case with silicone-based potting
- Lifetime: 50,000 hours at 70°C case temperature
- 90°C maximum case temperature
- Class 2 power supply

Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 to 277 Vac	60 W	8 to 43 Vdc	280 to 1750 mA Constant Current	up to 87% typical	90°C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase, & 0-10 V	1 to 100% (% of Iout)	300 ms typical

### Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Iout (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
<b>ESM020W: up to 20 W</b>					
ESM020W-0280-42	120 to 277	280	11.8	24	42
ESM020W-0350-42	120 to 277	350	14.7	24	42
ESM020W-0350-42-Z1 <sup>®</sup>	120 to 277	350	14.7	24	42
ESM020W-0400-42	120 to 277	400	16.8	24	42
ESM020W-0440-25	120 to 277	440	11.0	19	25
ESM020W-0440-25-SS-F1B <sup>®</sup>	120 to 277	440	11.0	19	25
ESM020W-0440-34-SS-F1B <sup>®</sup>	120 to 277	440	15.0	27	34
ESM020W-0440-34	120 to 277	440	15.0	19	34
ESM020W-1000-14	120 to 277	1000	14.0	8	14
<b>ESM030W: 21 to 30 W</b>					
ESM030W-0500-42	120 to 277	500	21.0	24	42
ESM030W-0550-42	120 to 277	550	23.1	24	42
ESM030W-0700-32	120 to 277	700	22.4	21	32
ESM030W-0700-42	120 to 277	700	29.4	24	42
ESM030W-0700-42-Z1 <sup>®</sup>					
ESM030W-0900-26	120 to 277	900	23.4	20.5	26
ESM030W-0940-26-SS-F1B <sup>®</sup>	120 to 277	940	24.4	19	26
ESM030W-1750-14	120 to 277	1750	24.5	8	14
<b>ESM040W: 31 to 40 W</b>					
ESM040W-0700-56	120 to 277	700	39.2	40	56
ESM040W-0800-42	120 to 277	800	33.6	24	42
ESM040W-0850-42	120 to 277	850	35.7	24	42
ESM040W-0900-42	120 to 277	900	37.8	24	42
ESM040W-0940-33-SS-F1B <sup>®</sup>	120 to 277	940	31.0	24	33
ESM040W-0940-43	120 to 277	940	40.4	32	43
<b>ESM050W: 41 to 50 W</b>					
ESM050W-1050-42	120 to 277	1050	44.1	24	42
ESM050W-1050-42-Z1 <sup>®</sup>	120 to 277	1050	44.1	24	42
ESM050W-1200-42	120 to 277	1200	50.4	24	42
ESM050W-1400-34	120 to 277	1400	47.6	23	34
<b>ESM060W: 51 to 60 W</b>					
ESM060W-1400-42	120 to 277	1400	58.8	24	42

- The ESM020W-0440-25-SS-F1B is specifically intended to drive the Cree LMH2 850 sunset module and exhibits a customized 0-10V dimming transfer function. It will not work with any other LED or LED string.
- The ESM020W-0440-34-SS-F1B is specifically intended to drive the Cree LMH2 1250 sunset module and exhibits a customized 0-10V dimming transfer function. It will not work with any other LED or LED string.
- The ESM030W-0940-26-SS-F1B is specifically intended to drive the Cree LMH2 2000 sunset module and exhibits a customized 0-10V dimming transfer function. It will not work with any other LED or LED string.
- The ESM040W-0940-33-SS-F1B is specifically intended to drive the Cree LMH2 3000 sunset module and exhibits a customized 0-10V dimming transfer function. It will not work with any other LED or LED string.
- Models with the "Z1" suffix exhibit a non-linear 0-10V dimming profile:(10V to 9.1V=100%, 1V to 0.8V=1%, <0.8V dim-to-off).

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

### Features

- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0-10 V dimmers
- TRIAC and ELV dimming only at 120 Vac
- Linear 0-10 V dimming transfer function: 10V=100%, 1V=10%, 0.1V=1%. Models with the "Z1" suffix exhibit a non-linear 0-10V dimming profile (10V to 9.1V=100%, 1V to 0.8V=1%, <0.8V dim-to-off).
- Lifetime: 50,000 hours at 70°C case temperature [(39°C ambient temperature) for ESM050W-1200-42 (50 W)]
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B (120 Vac)/Class A (277 Vac) and EN55015 (CISPR 15) at 220 to 240 Vac
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- IP20-rated Bottom Leads with Studs metal case with silicone-based potting
- 90°C maximum case temperature
- Class 2 power supply

### Applications

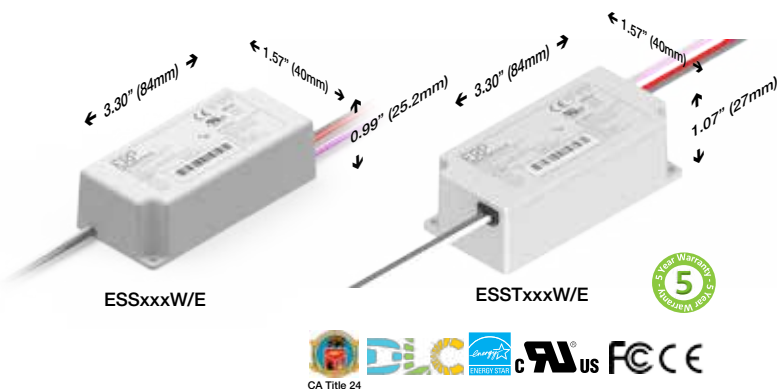
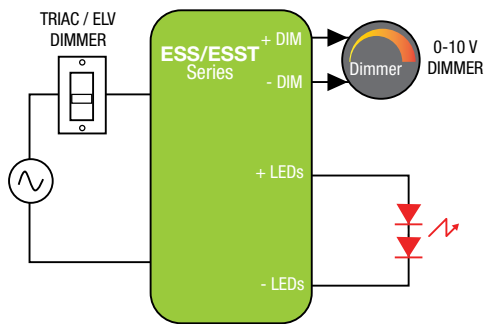
- Recessed downlights
- Commercial lighting
- Residential lighting
- Architectural lighting

# ESS/ESST SERIES 6 W - 40 W

Tri-Mode Dimming™ (TRIAC, ELV & 0-10 V) Constant Current  
LED Drivers with Fast Startup Time

Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	
120 to 277 Vac, 220 to 240 Vac	40 W	6 to 56 Vdc	200 to 2100 mA Constant Current	up to 87% typical	
Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
90°C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase, & 0-10 V	1 to 100% (% of Iout)	300 ms typical

## Typical Application Diagram



## Features

- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0-10 V dimmers
- ESSxxxW: TRIAC and ELV dimming only at 120 Vac.
- ESSxxxE: TRIAC and ELV dimming only at 230 Vac.
- Linear 0-10 V dimming transfer function: 10V=100%, 1V=10%, 0.1V=1%
- Lifetime: 50,000 hours at 70°C case temperature
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B (120 Vac)/Class A (277 Vac) and EN55015 (CISPR 15) at 220 to 240 Vac
- Complies with ENERGY STAR® luminaire specification and with DLC (Design Light Consortium®) technical requirements
- IP64-rated case with silicone-based potting. IP66 for ESST040.
- 90°C maximum case temperature
- Class 2 power supply

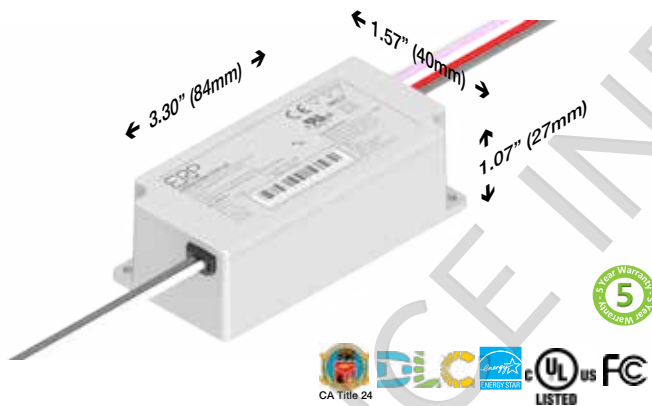
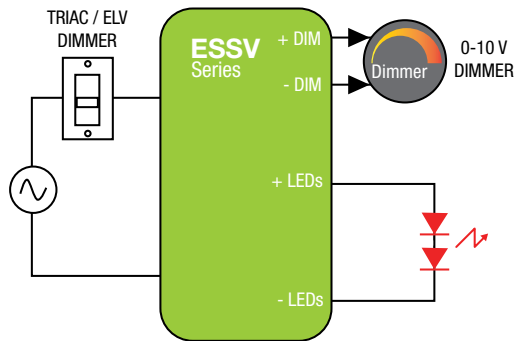
ERP Part Number	Nominal Input Voltage (Vac)	Iout (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
<b>120 TO 277 VAC NOMINAL VOLTAGE</b>					
<b>ESS010W: up to 10 W</b>					
ESS010W-0180-42	120 to 277	180	7.6	24	42
ESS010W-0200-42	120 to 277	200	8.4	24	42
ESS010W-0250-42	120 to 277	250	10.5	24	42
ESS010W-0250-42-Z1™	120 to 277	250	10.5	24	42
ESS010W-0350-24	120 to 277	350	8.4	14	24
ESS010W-0500-12	120 to 277	500	6.0	6	12
ESS010W-0500-18	120 to 277	500	9.0	10	18
ESS010W-0750-12	120 to 277	750	9.0	6	12
<b>ESS015W: 11 to 15 W</b>					
ESS015W-0300-42	120 to 277	300	12.6	24	42
ESS015W-0350-32	120 to 277	350	11.2	21	32
ESS015W-0400-32	120 to 277	400	12.8	21	32
ESS015W-0350-42	120 to 277	350	14.7	24	42
ESS015W-0350-42-Z1™	120 to 277	350	14.7	24	42
ESS015W-0400-32	120 to 277	400	12.8	21	32
ESS015W-0440-25	120 to 277	440	11.0	19	25
ESS015W-0440-34	120 to 277	440	15.0	24	34
ESS015W-0700-18	120 to 277	700	12.6	10	18
ESS015W-0700-18-Z1™	120 to 277	700	12.6	10	18
ESS015W-1000-12	120 to 277	1000	12.0	6	12
ESS015W-1050-14	120 to 277	1050	14.7	8	14
ESS015W-1050-14-Z1™	120 to 277	1050	14.7	8	14
<b>ESS020W: 16 to 20 W</b>					
ESS020W-0350-56	120 to 277	350	19.6	40	56
ESS020W-0400-42	120 to 277	400	16.8	24	42
ESS020W-0450-42	120 to 277	450	18.9	24	42
ESS020W-0500-32	120 to 277	500	16.0	21	32
ESS020W-0500-34	120 to 277	500	17.0	24	34
ESS020W-0600-27	120 to 277	600	16.2	20	27
ESS020W-0700-24	120 to 277	700	16.8	14	24
ESS020W-1400-14	120 to 277	1400	19.6	8	14
ESS020W-1400-14-Z1™	120 to 277	1400	19.6	8	14
<b>ESS030W: 21 to 30 W</b>					
ESS030W-0500-42	120 to 277	500	21.0	24	42
ESS030W-0500-42-Z1™	120 to 277	500	21.0	24	42
ESS030W-0550-42	120 to 277	550	23.1	24	42
ESS030W-0550-42-Y1™	120 to 277	550	23.1	24	42
ESS030W-0620-42	120 to 277	620	26.0	24	42
ESS030W-0620-42-Z1™	120 to 277	620	26.0	24	42
ESS030W-0700-32	120 to 277	700	22.4	21	32
ESS030W-0700-42	120 to 277	700	29.4	24	42
ESS030W-0700-42-Z1™	120 to 277	700	29.4	24	42
ESS030W-0900-27	120 to 277	900	24.3	20	27
ESS030W-0900-32	120 to 277	900	28.8	21	32
ESS030W-1100-27	120 to 277	1100	29.7	20	27
ESS030W-1750-14	120 to 277	1750	24.5	8	14
ESS030W-1750-14-Z1™	120 to 277	1750	24.5	8	14
ESS030W-2100-14	120 to 277	2100	29.4	8	14
<b>ESS040W: 31 to 40 W</b>					
ESST040W-0800-42	120 to 277	800	33.6	24	42
ESST040W-0900-42	120 to 277	900	37.8	24	42
ESST040W-1400-24	120 to 277	1400	33.6	14	24
ESST040W-1400-27	120 to 277	1400	37.8	20	27
<b>220 TO 240 VAC NOMINAL INPUT VOLTAGE</b>					
<b>ESS010E: 11 to 10 W</b>					
ESS010E-0250-42	220 to 240	250	10.5	24	42
<b>ESS015E: 11 to 15 W</b>					
ESS015E-0350-32	220 to 240	350	11.2	21	32
ESS015E-0350-42	220 to 240	350	14.7	24	42
<b>ESS020E: 16 to 20 W</b>					
ESS020E-0400-42	220 to 240	400	16.8	24	42
ESS020E-0450-42	220 to 240	450	18.9	24	42
<b>ESS030E: 21 to 30 W</b>					
ESS030E-0500-42	220 to 240	500	21.0	24	42
ESS030E-0620-42	220 to 240	620	26.0	24	42
ESS030E-0700-42	220 to 240	700	29.4	24	42
<b>ESS040E: 31 to 40 W</b>					
ESST040E-0800-42	220 to 240	800	33.6	24	42
ESST040E-0900-42	220 to 240	900	37.8	24	42

1. Non-linear 0-10V Dimming Profile (10V to 9.1V=100%, 1V to 0.8V=1%, <0.8V dim-to-off).  
2. Non-linear 0-10V dimming profile: 10V to 9.1V=100%, 1.2V to 0.6V=1%, Dim to off <0.68V.



Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 to 277 Vac	40 W	14 to 42 Vdc	250 to 2100 mA Constant Current	up to 87% typical	90°C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase & 0-10 V	1 to 100% (% of Iout)	300 ms typical

### Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Iout (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
ESSV010W: up to 10 W					
ESSV010W-0250-42	120 to 277	250	10.5	24	42
ESSV015W: 11 to 15 W					
ESSV015W-0300-42	120 to 277	300	12.6	24	42
ESSV020W: 16 to 20 W					
ESSV020W-0400-42	120 to 277	400	16.8	24	42
ESSV030W: 21 to 30 W					
ESSV030W-0500-42	120 to 277	500	21.0	24	42
ESSV030W-0620-42	120 to 277	620	26.0	24	42
ESSV030W-0700-42	120 to 277	700	29.4	24	42
ESSV040W: 31 to 40 W					
ESSV040W-0900-42	120 to 277	900	37.8	24	42
ESSV040W-1400-27	120 to 277	1400	37.8	20	27

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

### Features

- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0-10 V dimmers
- Linear 0-10V dimming transfer function (10V=100%, 1V=10%, 0.1V=1%). Non-linear 0-10V dimming available upon request.
- Lifetime: 50,000 hours min at 70°C case temperature
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B (120 Vac)/Class A (277 Vac) and EN55015 (CISPR 15) at 220/230/240 Vac
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- IP66-rated thermally-enhanced case with silicone-based potting
- UL class P
- 5VA flammability rating
- 90°C maximum case hot spot temperature
- Class 2 power supply

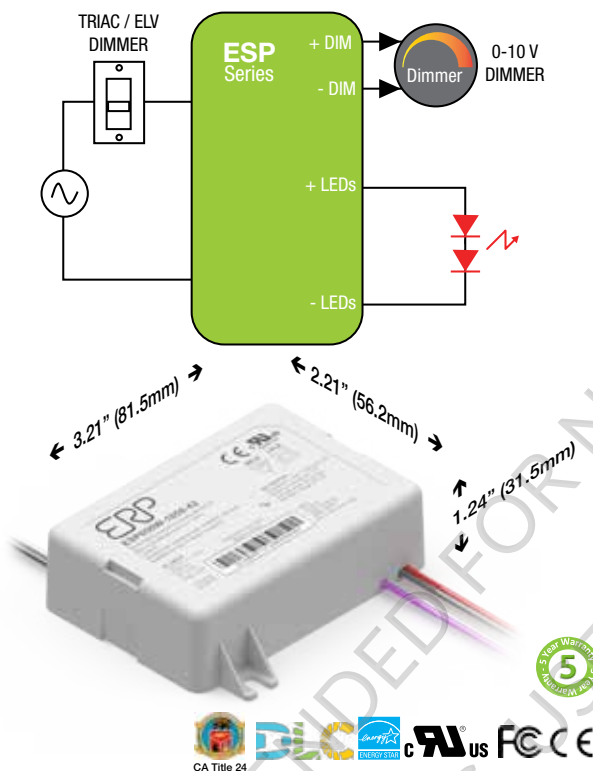
### Applications

- Commercial lighting
- Residential lighting
- Architectural lighting
- Wide-area downlights



Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 to 277 Vac	40 W	21 to 56 Vdc	700 to 1400 mA Constant Current	up to 87% typical	90°C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase & 0-10 V	1 to 100% (% of Iout)	300 ms typical

### Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Iout (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
<b>120 TO 277 VAC NOMINAL VOLTAGE</b>					
<b>ESP040W: 30 to 40 W</b>					
ESP040W-0700-56	120 to 277	700	39.2	40	56
ESP040W-0800-42	120 to 277	800	33.6	24	42
ESP040W-0850-42	120 to 277	850	35.7	24	42
ESP040W-0900-42	120 to 277	900	37.8	24	42
ESP040W-0940-33-SS-F1 <sup>(1)</sup>	120 to 277	940	31.0	24	33
ESP040W-0940-43	120 to 277	940	40.4	35	43
<b>ESP050W: 41 to 50 W</b>					
ESP050W-1050-42	120 to 277	1050	44.1	24	42
ESP050W-1200-42	120 to 277	1200	50.4	24	42
ESP050W-1400-32	120 to 277	1400	44.8	21	32
ESP050W-1400-34	120 to 277	1400	47.6	23	34
<b>ESP060W: 51 to 60 W</b>					
ESP060W-1400-42	120 to 277	1400	58.8	24	42
<b>220 TO 240 VAC NOMINAL INPUT VOLTAGE</b>					
<b>ESP040E: 30 to 40 W</b>					
ESP040E-0800-42	220 to 240	800	33.6	24	42
ESP040E-0850-42	220 to 240	850	35.7	24	42
ESP040E-0900-42	220 to 240	900	37.8	24	42
<b>ESP050E: 41 to 50 W</b>					
ESP050E-1050-42	220 to 240	1050	44.1	24	42
ESP050E-1200-42	220 to 240	1200	50.4	24	42
<b>ESP060E: 41 to 50 W</b>					
ESP060E-1400-42	220 to 240	1400	58.8	24	42

1. The ESP040W-0940-33-SS-F1 is specifically intended to drive the Cree LMH2 3000 sunset module and exhibits a customized 0-10V dimming transfer function. It will not work with any other LED or LED string.

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

### Features

**NOT RECOMMENDED FOR NEW DESIGNS. FOR NEW DESIGNS, USE THE ESPT SERIES.**

- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0-10 V dimmers
- ESPxxxW: TRIAC and ELV dimming only at 120 Vac.
- ESPxxxE: TRIAC and ELV dimming only at 230 Vac.
- Lifetime: 50,000 hours at 70°C case temperature
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B (120 Vac)/Class A (277 Vac) and EN55015 (CISPR 15) at 220/230/240 Vac
- Complies with ENERGY STAR® luminaire specification and with DLC (Design Light Consortium®) technical requirements
- IP64-rated case with silicone-based potting
- 90°C maximum case hot spot temperature
- Class 2 power supply

### Applications

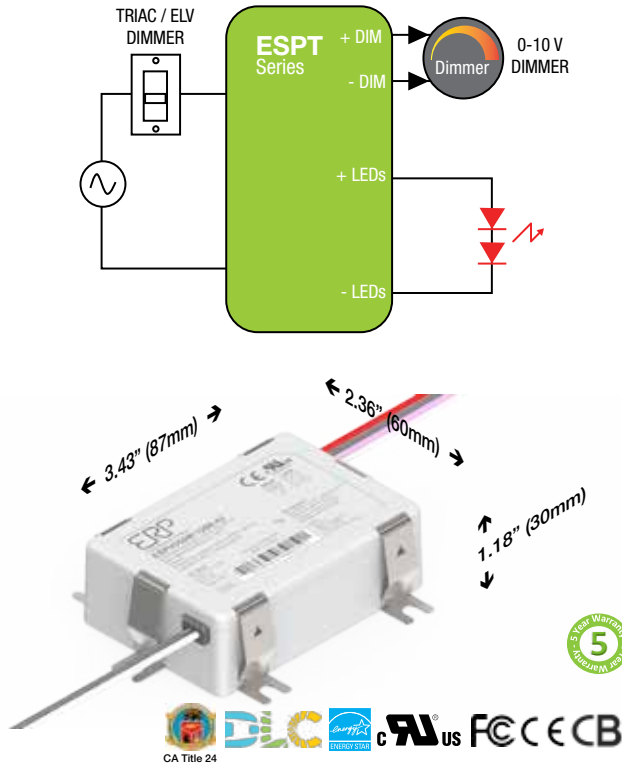
- Recessed lighting (down lights)
- Commercial & Residential lighting
- Architectural lighting





Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 to 277 Vac	40 W	21 to 56 Vdc	700 to 1400 mA Constant Current	up to 87% typical	90°C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase & 0-10 V	1 to 100% (% of Iout)	300 ms typical

### Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Iout (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
<b>120 TO 277 VAC NOMINAL VOLTAGE</b>					
<b>ESPT040W: 30 to 40 W</b>					
ESPT040W-0700-56	120 to 277	700	39.2	40	56
ESPT040W-0800-42-Z1 <sup>(1)</sup>	120 to 277	800	33.6	24	42
ESPT040W-0900-42-Z1 <sup>(1)</sup>	120 to 277	900	37.8	24	42
<b>ESPT050W: 41 to 50 W</b>					
ESPT050W-1050-42-Z1 <sup>(1)</sup>	120 to 277	1050	44.1	24	42
ESPT050W-1200-42-Z1 <sup>(1)</sup>	120 to 277	1200	50.4	24	42
ESPT050W-1400-34	120 to 277	1400	47.6	23	34
<b>ESPT060W: 51 to 60 W</b>					
ESPT060W-1400-42-Z1 <sup>(1)</sup>	120 to 277	1400	58.8	24	42
<b>220 TO 240 VAC NOMINAL INPUT VOLTAGE</b>					
<b>ESPT040E: 30 to 40 W</b>					
ESPT040E-0800-42	220 to 240	800	33.6	24	42
ESPT040E-0900-42	220 to 240	900	37.8	24	42
<b>ESPT050E: 41 to 50 W</b>					
ESPT050E-1050-42	220 to 240	1050	44.1	24	42
ESPT050E-1200-42	220 to 240	1200	50.4	24	42
<b>ESPT060E: 41 to 50 W</b>					
ESPT060E-1400-42	220 to 240	1400	58.8	24	42

1. The ESPTxxxW-xxxx-42-Z1 exhibits a non-linear 0-10V Dimming Profile (10V to 9.1V=100%, 1V to 0.8V=1%, <0.8V dim-to-off).

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

### Features

- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0-10 V dimmers
- ESPTxxxW: TRIAC and ELV dimming only at 120 Vac.
- ESPTxxxE: TRIAC and ELV dimming only at 230 Vac.
- Linear 0-10 V dimming transfer function: 10V=100%, 1V=10%, 0.1V=1%. Models with the "Z1" exhibit a non-linear 0-10V dimming profile (10V to 9.1V=100%, 1V to 0.8V=1%, dim-to-off <0.8V).
- Lifetime: 50,000 hours at 70°C case temperature
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B (120 Vac)/Class A (277 Vac) and EN55015 (CISPR 15) at 220/230/240 Vac
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- IP66-rated case with silicone-based potting
- 90°C maximum case temperature
- Class 2 power supply

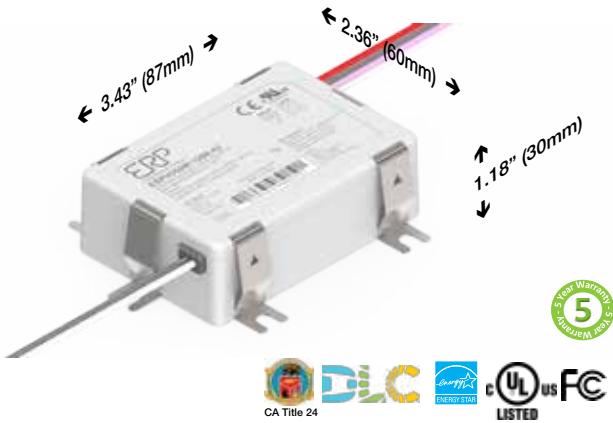
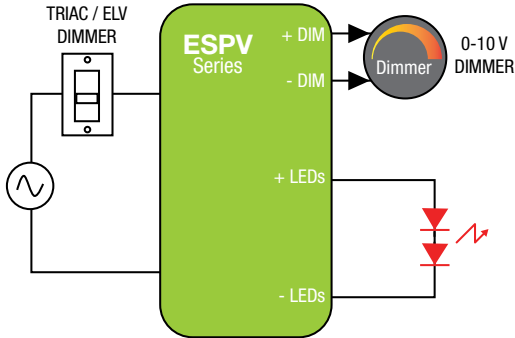
### Applications

- Recessed lighting (down lights)
- Commercial & Residential lighting
- Architectural lighting



Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 to 277 Vac	60 W	28 to 42 Vdc	1050 to 1200 mA Constant Current	up to 87% typical	90°C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase & 0-10 V	1 to 100% (% of Iout)	300 ms typical

### Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Iout (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
ESP050W: 41 to 50 W					
ESPV050W-1050-42-Z1 <sup>(1)</sup>	120 to 277	1050	44.1	24	42
ESPV050W-1200-42-Z1 <sup>(1)</sup>	120 to 277	1200	50.4	24	42
ESP060W: 51 to 60 W					
ESPV060W-1400-42-Z1 <sup>(1)</sup>	120 to 277	1400	58.8	24	42

1. The ESPVxxxW-xxxx-42-Z1 exhibits a non-linear 0-10V Dimming Profile (10V to 9.1V=100%, 1V to 0.8V=1%, <0.8V dim-to-off).

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

### Applications

- Commercial lighting
- Residential lighting
- Architectural lighting
- Outdoor lights

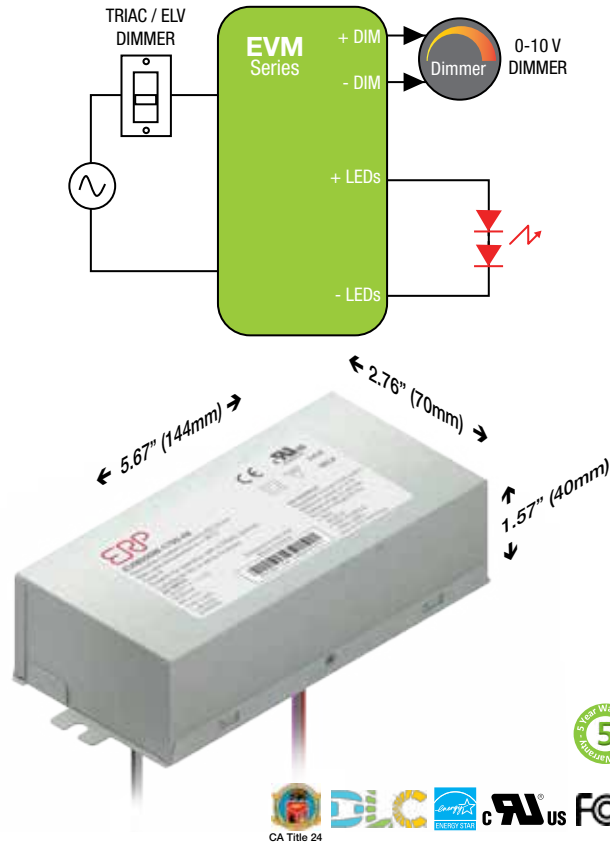


### Features

- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0-10 V dimmer
- Non-linear 0-10V dimming profile: 10V to 8.1V=100%, 1V to 0.8V=1%, <0.8V dim-to-off<0.8V
- Lifetime: 50,000 hours min at 70°C case temperature
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B (120 Vac)/Class A (277 Vac) and EN55015 (CISPR 15) at 220/230/240 Vac
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- IP66-rated thermally-enhanced case with silicone-based potting
- UL class P
- 5VA flammability rating
- 90°C maximum case hot spot temperature
- Class 2 power supply

Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 to 277 Vac	120 W	30 to 84 Vdc	1050 to 3000 mA Constant Current	up to 87% typical	90°C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase & 0-10 V	1 to 100% (% of Iout)	400 ms typical

### Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Iout (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
EVM060W: up to 60 W					
EVM060W-1400-42-COB	120 to 277	1400	58.8	30	42
EVM080W: 60 to 80 W					
EVM080W-1250-56	120 to 277	1250	70.0	40	56
EVM080W-1750-42	120 to 277	1750	73.5	30	42
EVM080W-1900-42	120 to 277	1900	79.8	30	42
EVM090W: 81 to 90 W					
EVM090W-1050-84 <sup>(1)</sup>	120 to 277	1050	88.2	70	84
EVM090W-1700-48-N1B <sup>(2)</sup>	120 to 277	1700	81.6	37	48
EVM090W-2000-42	120 to 277	2000	84.0	30	42
EVM100W: 91 to 100 W					
EVM100W-1200-80 <sup>(3)</sup>	120 to 277	1200	96.0	66	80
EVM100W-1200-84 <sup>(3)</sup>	120 to 277	1200	100.8	70	84
EVM100W-1700-56	120 to 277	1700	95.2	40	56
EVM100W-2100-45	120 to 277	2100	94.5	32	45
EVM100W-2350-42	120 to 277	2350	98.7	30	42
EVM110W: 101 to 110 W					
EVM110W-2000-52-N1B <sup>(3)(4)</sup>	120 to 277	2000	104.0	40	52
EVM110W-2500-42 <sup>(3)</sup>	120 to 277	2500	105.0	30	42
EVM120W: 111 to 120 W					
EVM120W-1400-84	120 to 277	1400	117.6	70	84
EVM120W-2700-42 <sup>(3)</sup>	120 to 277	2700	113.4	30	42
EVM120W-3000-40 <sup>(3)</sup>	120 to 277	3000	120.0	30	40

1. Not class 2.  
 3. The EVM090W-1700-48-N1B is specifically intended to drive the Cree LMH2 6000 module and exhibits a customized 0-10V dimming transfer function.  
 4. The EVM110W-2000-52-N1B is specifically intended to drive the Cree LMH2 8000 module and exhibits a customized 0-10V dimming transfer function.

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

### Features

- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0-10 V dimmers
- TRIAC and ELV dimming only at 120 Vac
- Outdoor surge protection: 4 kV line to line/6 kV line to earth
- Linear 0-10 V dimming transfer function: 10V=100%, 1V=10%, 0.1V=1%
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B (120 Vac)/Class A (277 Vac) and EN55015 (CISPR 15) at 220/230/240 Vac
- IP20-rated Bottom Leads with Studs metal case with silicone-based potting
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- Lifetime: 50,000 hours at 70°C case temperature
- 90°C maximum case temperature
- Class 2 power supply (only some models)

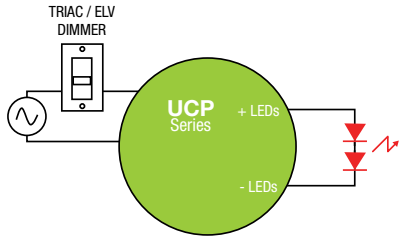
### Applications

- High Bay Lights • Industrial LED Lighting • Metal Halide replacement
- Tunnels and street lighting • Outdoor LED Lighting
- Wide-area downlights
- Suitable for driving high current COB LEDs such as Cree's CXA3050/3070/2590/3590, Bridgelux' Vero series and modules such as Cree's LMH2 6000/8000



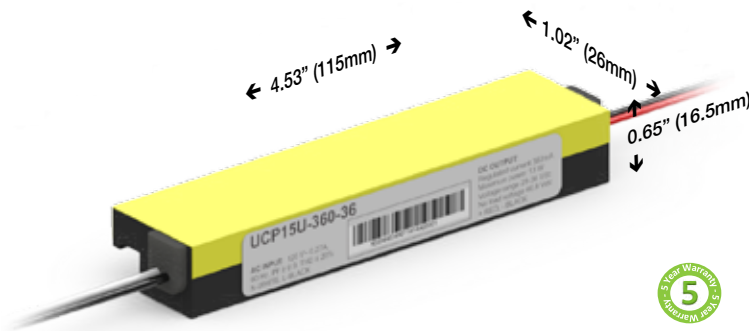
Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 Vac	17.3 W	11 to 36 Vdc	120 to 480 mA Constant Current	up to 87% typical	90°C	< 20%	> 0.9	TRIAC & ELV	1 to 100%	200 ms

### Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Max. Output Power (W)	Iout (mA)	Output Voltage Range (Vdc)	
				min.	max.
UCP05: up to 5 W					
UCP05U-120-36	120	4.3	120	28	36
UCP10: >5 to 10 W					
UCP10U-350-16	120	5.6	350	11	16
UCP10U-240-36	120	8.6	240	28	36
UCP15: >10 to 15 W					
UCP15U-350-30	120	10.5	350	24	30
UCP15U-360-36	120	13.0	360	28	36
UCP20: >15 to 16 W					
UCP20U-480-36	120	17.3	480	28	36

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)



### Features

- Low profile of 16.5 mm
- Compatible with industry standard TRIAC (forward-phase or leading-edge) and ELV (reverse-phase or trailing-edge)
- 1% to 100% dimmable output
- Very short startup time of 150 ms
- 120 Vac nominal input
- Non-Class 2 (non-isolated)
- High efficiency: 87%
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: compliant with FCC CFR Title 47 Part 15 Class B
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) technical requirements
- 90°C maximum case temperature
- Lifetime: 50,000 hours min at 40°C ambient temperature

### Applications

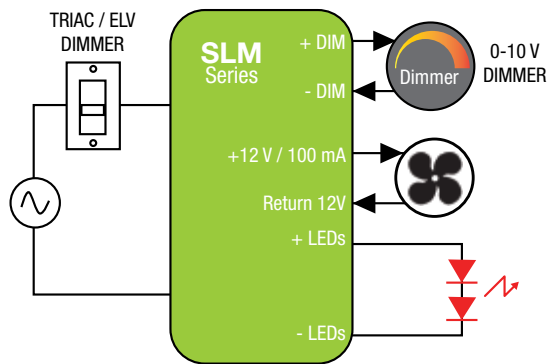
- Undercabinet Lighting





Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 to 277 Vac	160 W	28 to 130 Vdc	1.0 to 4.4 A Constant Current	up to 90% typical	90°C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase & 0 - 10V	1 to 100% (% of Iout)	0.5 sec

### Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Max. Output Power (W)	Iout (A)	Output Voltage Range (Vdc)	
				min.	max.
SLM90W: up to 90 W					
SLM090W-1.05-84-ZA <sup>(4)</sup>	120 to 277	88.2	1.05	60	84
SLM090W-2.1-42-TC <sup>(1)</sup>	120 to 277	88.2	2.1	30	42
SLM100W: 91 to 100 W					
SLM100W-1.7-56-TA <sup>(2)</sup>	120 to 277	95.2	1.7	40	56
SLM120W: 111 to 120 W					
SLM120W-2.0-56-TA <sup>(2)</sup>	120 to 277	112.0	2	40	56
SLM120W-2.8-42-XA <sup>(3)</sup>	120 to 277	117.6	2.8	30	42
SLM140W: 131 to 140 W					
SLM140W-1.05-130-ZA <sup>(4)</sup>	120 to 277	136.5	1.05	90	130
SLM160W: 151 to 160 W					
SLM160W-1.0-160-ZA <sup>(4)</sup>	120 to 277	160	1	129	160
SLM160W-2.8-56-ZA <sup>(3)</sup>	120 to 277	156.8	2.8	40	56
SLM160W-3.7-42-XA <sup>(3)</sup>	120 to 277	155.4	3.7	30	42
SLM160W-3.9-40-ZA <sup>(4)</sup>	120 to 277	156.0	3.9	30	40
SLM160W-4.4-36-ZA <sup>(4)</sup>	120 to 277	158.4	4.4	28	36

1. T: ELV & 0-10 V dimming (1-100%), C: 1kV /2kV surge protection & IP64  
 2. T: ELV & 0-10 V dimming (1-100%), A: 4kV/4kV surge protection & IP66  
 3. X: No dimming, A: 4kV/4kV surge protection & IP66  
 4. Z: 0-10V dimming only (1-100%), A: 4kV/4kV surge protection & IP66

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

### Applications

- Street Lights
- Grow Lights/ Horticulture
- High bay lights
- Low bay lights



### Features

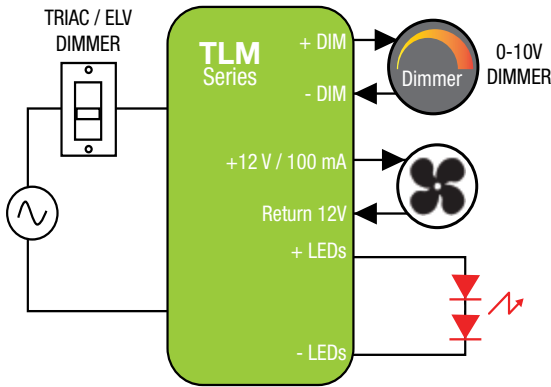
- Compatible with TRIAC and ELV dimming only at 120 Vac
- +12 V/100 mA auxiliary output to power external fan, motion or ambient light sensor, or wireless module
- Surge protection:
  - IEEE61000-4-5: 4 kV line to line/4 kV line to earth for outdoor(1 kV line to line/2 kV line to earth for indoor also available)
  - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
- Protections: Under-voltage (brownout), output open load, over-current and short-circuit (hiccup), over-temperature with auto-recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class A at 120 Vac & 277 Vac and EN55015 (CISPR 15) at 220/230/240 Vac
- IP66-rated case with silicone-based potting
- Lifetime: 50,000 hours min @ Tc = 70°C
- 90°C maximum case hot spot temperature
- Complies with ENERGY STAR® luminaire specification and DLC (DesignLight Consortium®) technical requirement

# TLM SERIES 90 W - 160 W

Tri-Mode Dimming™ (TRIAC, ELV & 0-10 V) , High Power  
Constant Current LED Drivers with 0.01 to 100% Dimming Range

Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 to 277 Vac	160 W	68 to 85 Vdc	1.8 A Constant Current	up to 90% typical	90°C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase & 0 - 10V	0.01 to 100% (% of Iout)	0.5 sec

## Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Iout (A)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
TLM90W: 81 to 90 W					
TLM90W-2.1-42	120 to 277	2.1	88.2	30	42
TLM160W: 151 to 160 W					
TLM160W-1.8-85	120 to 277	1.8	153.0	68	85

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)



## Features

- Dimming range: 0.01% – 100% with ETC, Leprecon and Elation stage lighting AC phase dimmers
- +12 V/100 mA auxiliary output to power external fan
- TLMxxxW: ELV dimming only at 120 Vac
- TLMxxxE: ELV dimming only at 230 Vac
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class A at 120 Vac & 277 Vac and EN55015 (CISPR 15) at 220/230/240 Vac
- Complies with ENERGY STAR® luminaire specification and DLC (Design Light Consortium®) technical requirements
- IP66-rated case with silicone-based potting
- 90°C maximum case hot spot temperature

## Applications

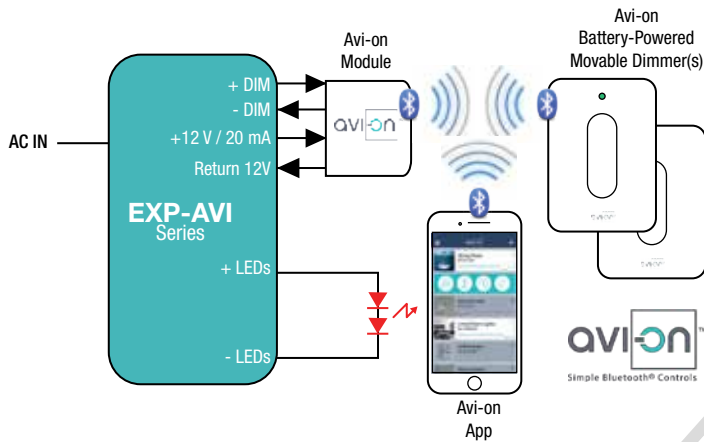
- Stage lighting
- Studio Lighting





Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 to 277 Vac	44.1 W	30 to 42 Vdc	700 to 1050 mA Constant Current	up to 82% typical	90°C (measured at the hot spot)	< 20%	> 0.9	Bluetooth®	1 - 100% (% of Iout)	300 ms typical

### Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Iout (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
EXPN030W: 21 to 30 W with Bluetooth® Mesh Module from Avi-on Labs					
EXPN030W-0700-42-AVI	120 to 277	700	29.4	30	42
EXPN050W: 41 to 50 W with Bluetooth® Mesh Module from Avi-on Labs					
EXPN050W-1050-42-AVI	120 to 277	1050	44.1	30	42

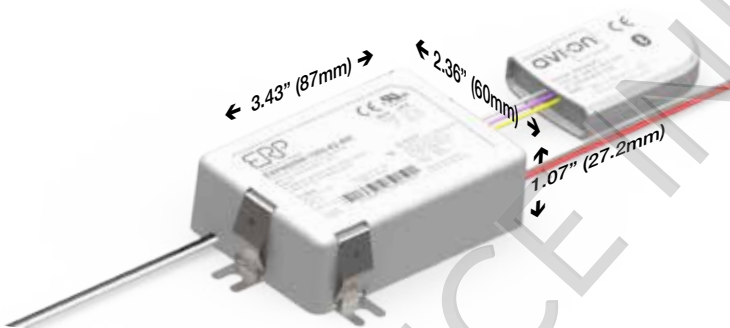
For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

### Avi-on Bluetooth® Mesh Solution

- Wireless lighting controls with simple set-up that anyone can use
- Pre-integrated Bluetooth® Smart + CSRmesh module enables brands to create multi-way controls and switching without additional wiring; no central gateway required
- Utility grade, secure, reliable mobile app & software
- Dimming, grouping, many users, schedules, timers
- Virtually unlimited range with mesh
- Download for free, additional services available
- Compatible with large ecosystem of products from major brands
- Avi-on battery-powered movable dimming switches available to complete the turnkey solution

### Applications

- Recessed downlights
- Residential lighting
- Architectural lighting
- Commercial lighting

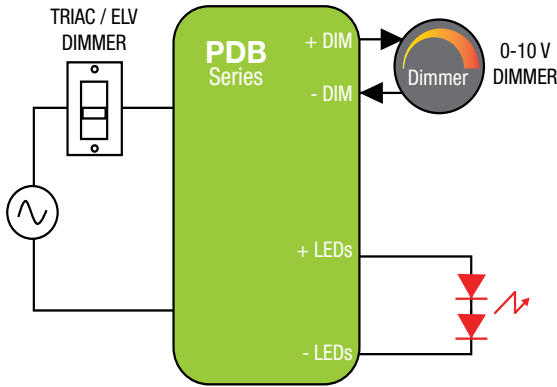


### Features

- EXPN030W-0700-42-AVI and EXPN050W-1050-42-AVI incorporates a fully compliant Bluetooth® Smart Mesh module from Avi-on labs ([www.avi-on.com](http://www.avi-on.com))
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- Dims to off
- 90°C maximum case hot spot temperature
- Class 2 power supply

Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 to 277 Vac	260 W	114 to 400 Vdc	325 to 1700 mA Constant Current	up to 93% typical	90°C (measured at the hot spot)	< 20%	> 0.9	0-10 V	1 -100% (% of Iout)	500 ms typical

### Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Max. Output Power (W)	Iout 1 (mA)	Vout 1 (Vdc)	Iout 2 (mA)	Vout 2 (Vdc)
PDB260W: 150 to 260 W						
PDB260W-0860-400	120 to 277	260.0	325 to 650	304 to 400	430 to 860	228 to 300
PDB260W-1300-280	120 to 277	260.0	465 to 930	213 to 280	650 to 1300	152 to 200
PDB260W-1700-210	120 to 277	260.0	620 to 1240	160 to 210	850 to 1700	114 to 150

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

### Programming

- Dual output voltage range selection (only for dual range models)
- Serial port programming
  - Current: 100% to 50% in each voltage range
  - Maximum output voltage
  - Data log read: SKU, S/N, lot code, hours of operation, FW rev., fault events: power failure, transients (short or surge), thermal events

### Options

- Ripple <10% @ 120 Hz and <8% @ 60 Hz (IEEE1789)
- Auxiliary output: up to 24 V / down to 3.3 V / up to 500 mA
- Alternate 0-10V dimming profiles: Linear, Logarithmic, Ballast type Mark7 (IEC60929, ANSI C82.11)
- Energy metering (as part of future software upgrade)

### Applications

- Street lighting
- Industrial LED Lighting
- Outdoor Lighting
- Wide-area Lighting
- Tunnels lighting

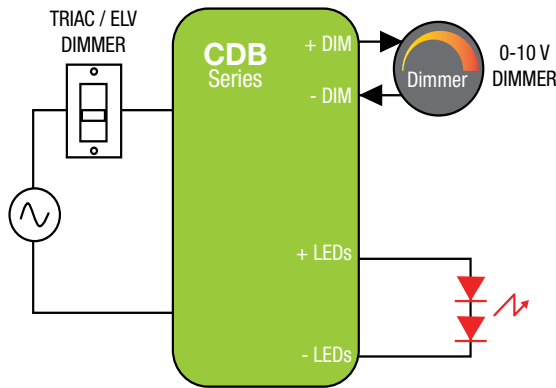


### Features

- Non-linear 0-10 V dimming profile with dim-to-off (10 V to 9.1 V=100%, 1.5 V to 0.6 V=1%, <0.6 V=dim-to-off)
- Auxiliary output 12 V/100 mA
- IP66-rated case with silicone-based potting
- Surge protection:
  - Combination wave IEC61000-4-5: 4 kV line to line/4 kV line to earth
  - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
- Ripple: 25%
- Protections: Output open load, over-current and short-circuit (hiccup), over-power, over-temperature with foldback and auto-recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class A at 120 Vac & 277 Vac and EN55015 (CISPR 15) at 220/230/240 Vac
- Lifetime: 50,000 hours at 70°C case temperature
- 90°C maximum case hot spot temperature
- UL Class P

Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 to 277 Vac	260 W	114 to 400 Vdc	325 to 1700 mA Constant Current	up to 93% typical	90°C (measured at the hot spot)	< 20%	> 0.9	0-10 V	1 to 100% (% of Iout)	500 ms typical

### Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Max. Output Power (W)	Iout 1 (mA)	Vout 1 (Vdc)	Iout 2 (mA)	Vout 2 (Vdc)
<b>CDB260W: 150 to 260 W</b>						
<b>CDB260W-0860-400</b>	120 to 277	260.0	325 to 650	304 to 400	430 to 860	228 to 300
<b>CDB260W-1300-280</b>	120 to 277	260.0	465 to 930	213 to 280	650 to 1300	152 to 200
<b>CDB260W-1700-210</b>	120 to 277	260.0	620 to 1240	160 to 210	850 to 1700	114 to 150

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

### Programming

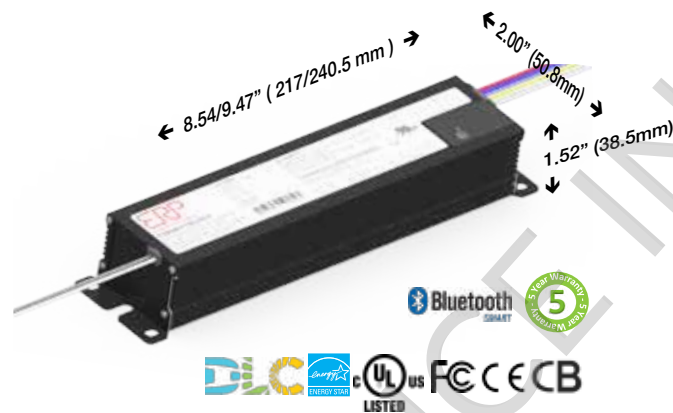
- Dual output voltage range selection (only for dual range models)
- Serial port programming
  - Current: 100% to 50% in each voltage range
  - Maximum output voltage
  - Data log read: SKU, S/N, lot code, hours of operation, FW rev., fault events: power failure, transients (short or surge), thermal events

### Communication

- Bi-directional (dimming up and down and data log read)
- Wireless communication protocols
  - Bluetooth Mesh with wire whip antenna and external removable antenna
  - ZigBee with wire whip antenna and external removable antenna
  - Other IEEE802.15.4 protocols available upon request
- Wired: DALI, DMX

### Options

- Ripple <10% @ 120 Hz and <8% @ 120 Hz (IEEE1789)
- Auxiliary output: up to 24 V / down to 3.3 V / up to 500 mA
- Alternate 0-10V dimming profiles: Linear, Logarithmic, Ballast type Mark7 (IEC60929, ANSI C82.11)
- Energy metering (as part of future software upgrade)



### Features

- Non-linear 0-10 V dimming profile with dim-to-off (10 V to 9.1 V=100%, 1.5 V to 0.6 V=1%, <0.6 V=dim-to-off)
- Auxiliary output 12 V/100 mA
- IP66-rated case with silicone-based potting
- Surge protection:
  - Combination wave IEC61000-4-5: 4 kV line to line/4 kV line to earth
  - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
- Ripple: 25%
- Protections: Output open load, over-current and short-circuit (hiccup), over-power, over-temperature with foldback and auto-recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class A at 120 Vac & 277 Vac and EN55015 (CISPR 15) at 220/230/240 Vac
- Lifetime: 50,000 hours at 70°C case temperature
- 90°C maximum case hot spot temperature
- UL Class P

### Applications

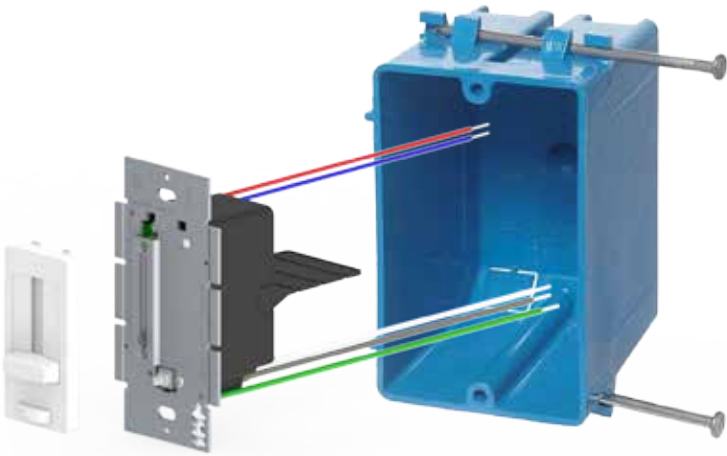
- Street lighting
- Industrial LED Lighting
- Outdoor Lighting
- Wide-area Lighting
- Tunnels lighting



Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current Min	Output Current Max	Efficiency	Max. Ambient Temperature	THD	Power Factor	Dimming Range	Startup Time
120 Vac	100 W	12, 24 V Constant Voltage	0	4.2 A	up to 92% typical	40°C	< 20%	> 0.9	1 to 100%	500 ms typical

ERP Part Number	Pout Max (W)	Vout Nom (V)	Iout Max (A)
VSW40U-12-ERP	40	12	3.3
VSW60U-12-ERP	60	12	5
VSW60U-24-ERP	60	24	2.5
VSW100U-24-ERP	100	24	4.2

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)



### Applications

- Track lights, downlights
- Tape/strip lights, under-cabinet lights



### Features

- 100 W max in a single gang box
- Constant voltage option: 12 & 24 V
- Maximum output current: 4.2 A
- Dimming is provided via a sliding button
- On/Off button
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B at 120 Vac
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- 90°C maximum case hot spot temperature
- Class 2 power supply





Nominal Input Voltage	Max. Output Power	Nominal Output Voltage	Max. Output Current	Efficiency	Max. Case Temperature	THD	Power Factor
120 to 277 Vac	260 W	12, 24, 48 Vdc	21.6, 10.8, 5.4 A	up to 93% typical	90°C (measured at the hot spot)	< 20%	>0.9

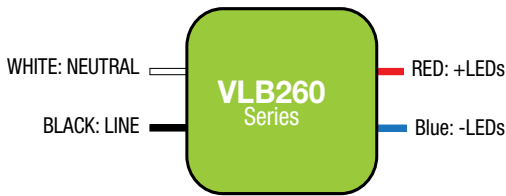
### Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Pout Max (W)	Vout Nom (Vdc)	Iout Max (A)
VLB260W: 260 W				
VLB260W-12	120 to 277	260.0	12	21.67
VLB260W-24	120 to 277	260.0	24	10.83
VLB260W-48	120 to 277	260.0	48	5.42

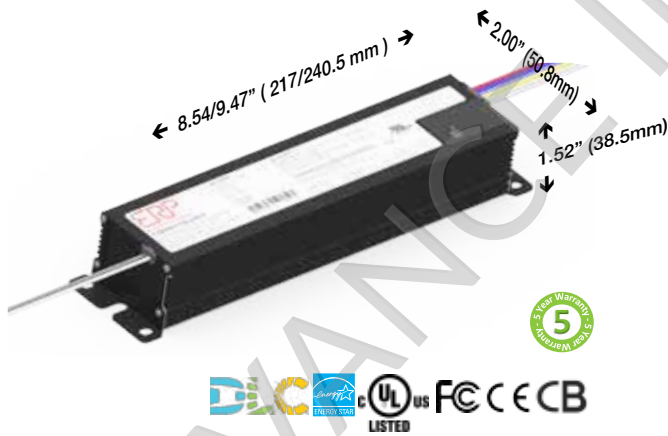
For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

### Wiring Diagram



### Applications

- Horticulture
- Industrial lights
- Outdoor and indoor



### Features

- Very high power density of 10.2 W/in<sup>3</sup>
- IP20-rated case with silicone-based potting
- Complies with ENERGY STAR® luminaire specification and DLC (DesignLight Consortium®) technical requirements
- 90°C maximum case temperature
- UL Class P
- Worldwide safety approvals

Nominal Input Voltage	Max. Output Power	Nominal Output Voltage	Max. Output Current	Efficiency	Max. Case Temperature	THD	Power Factor
120 to 277 Vac	60 W	12, 24, 48 Vdc	5, 2.5, 1.25 A	up to 93% typical	90°C (measured at the hot spot)	< 20%	>0.9

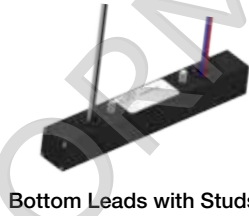
### Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Pout Max (W)	Vout Nom (Vdc)	Iout Max (A)
VLM60W: 60 W				
VLM60W-12	120 to 277	60.0	12	5
VLM60W-24	120 to 277	60.0	24	2.5
VLM60W-48	120 to 277	60.0	48	1.25

For additional options of output current and output voltage, contact your sales representative or send an email to: [SalesEnergy@ERP-Power.com](mailto:SalesEnergy@ERP-Power.com)

### Other Mounting Options

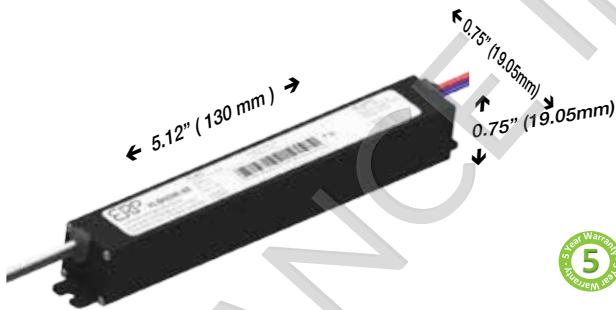


### Applications

- Strip lights
- Pendant lights
- Linear lights
- Cove Lights



### Wiring Diagram



### Features

- Very high power density of 23.2 W/in<sup>3</sup>
- Class 2 power supply
- IP66-rated case with silicone-based potting
- Different mounting options: Side Leads, Bottom Leads with Studs, and Terminal Blocks
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- 90°C maximum case temperature
- UL Class P
- Worldwide safety approvals

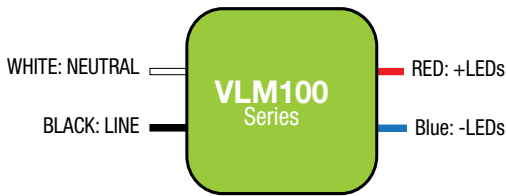


Nominal Input Voltage	Max. Output Power	Nominal Output Voltage	Max. Output Current	Efficiency	Max. Case Temperature	THD	Power Factor
120 to 277 Vac	96 W	12, 24, 48 Vdc	8, 4, 2 A	up to 93% typical	90°C (measured at the hot spot)	< 20%	>0.9

### Typical Application Diagram



### Wiring Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Pout Max (W)	Vout Nom (Vdc)	Iout Max (A)
VLM60W: 60 W				
VLM100W-12	120 to 277	96.0	12	8
VLM100W-24	120 to 277	96.0	24	4
VLM100W-48	120 to 277	96.0	48	2

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

### Other Mounting Options



### Applications

- Strip lights
- Pendant lights
- Linear lights
- Cove Lights



### Features

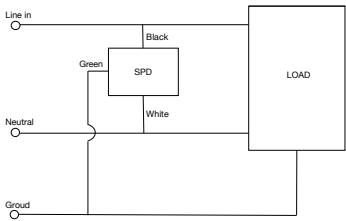
- Very high power density of 23.7 W/in<sup>3</sup>
- IP64-rated case with silicone-based potting
- Complies with ENERGY STAR® luminaire specification and DLC (DesignLight Consortium®) technical requirements
- 90°C maximum case temperature
- Class 2 power supply
- Worldwide safety approvals

ERP Part Number	Nominal Input Voltage	MCOV/Uc <sup>(4)</sup> (Vac)	Max. Peak Current (8/20µs) (kA)		Combination Wave (1.2/50µs-8/20µs) (kV/kA)		Measured Limited Voltage (MLV) <sup>(5)</sup> (V)			Thermal Fuse	EOL (End of Life) Remote Indicator LED	Connection	Case
			Inom <sup>(1)</sup>	Imax <sup>(2)</sup>	Vnom	Vmax	L-N	L-G	N-G				
SPD-277P-10KA	120 to 277	320	5	10	10	20	1230	1400	1420			Parallel	A
SPD-277P-20KA <sup>(3)</sup>	120 to 277	320	10	20	20	20	1890	1900	1870			Parallel	B
SPD-277S-10KA	120 to 277	320	5	10	10	20	1140	1140	1130	•		Series	A
SPD-277S-20KA <sup>(3)</sup>	120 to 277	320	10	20	20	20	1260	1280	1840	•		Series	B
SPD-277S-20KA-EILR <sup>(3)</sup>	120 to 277	320	10	20	20	20	1300	1290	2000	•	•	Series with EOL Remote LED Indicator	B

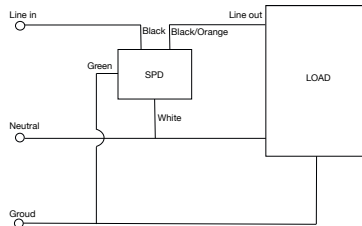
1. NOMINAL DISCHARGE CURRENT (In) (kA): It is the peak value of the current through the device having a current waveshape of 8/20µs where the device is capable of discharging 15 times.
2. MAXIMUM DISCHARGE CURRENT (Imax) (kA): It is the peak value of the current through the device having a current waveshape of 8/20µs where the device is capable of discharging once.
3. MEASURED LIMITING VOLTAGE (MLV) (V): Maximum residual voltage after the application of 8/20µs impulses at nominal discharge current.
4. MAXIMUM CONTINUOUS OPERATING VOLTAGE (MCOV/Uc) (Vac): It is the maximum root-mean-square (rms) voltage that may be continuously applied to the device.
5. MAXIMUM LOAD: 8 A for "xxxS-10kA", 12 A for "xxxS-20kA-xxxx"

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

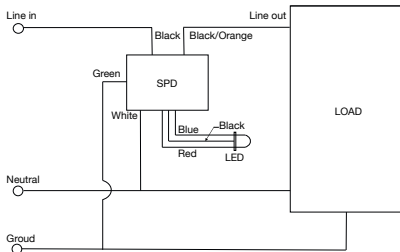
### Parallel Connection



### Series Connection

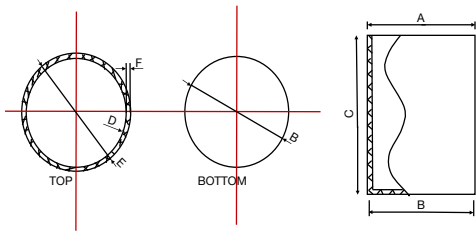


### Series Connection with Remote EOL Indicator



### Applications

- Additional level of protection from dangerous power line transient in commercial and industrial applications.
- Area & Roadway lighting
- Factory, Warehouse, and Distribution Center lighting
- Sports & Stage lighting
- Airports & Dockyard lighting



	Case A	Case B
Diameter (E):	35	45
Height (C):	64	65
Top Width (A):	35	45
Bottom Width (B):	33	43

RoHS

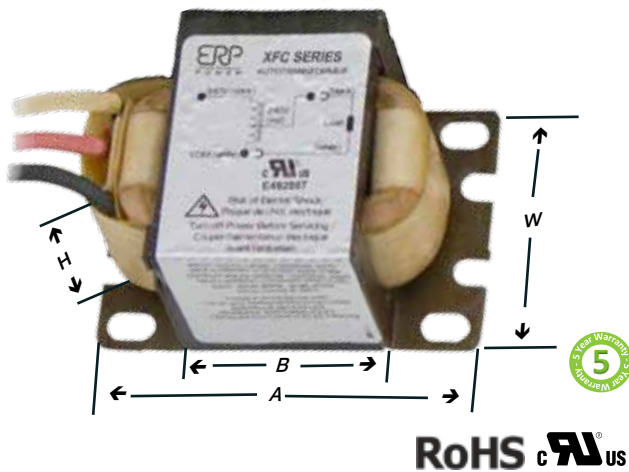
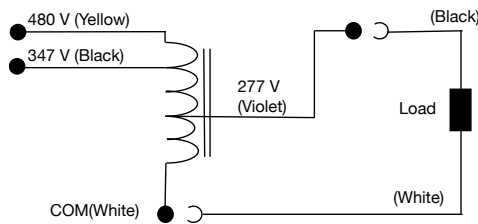
### Features

- IP67, optimized for use in outdoor applications
- Protects against surges in accordance with UL1449 and IEEE C62.41.2.C
- 90°C high temperature flameproof enclosure
- CAUTION: Only for use with universal input voltage LED drivers (277 Vac)

ERP Part Number	Max Load (VA)	Max Input Current (A) @ 480 Vac @ 377 Vac	Max Output Current (A)	Basic Dimensions inches mm				Max Net Weight (lbs)	Applied Mounting Bracket	UL Temperature Rating (°C)
				A	B	W	H			
XFC160-347/480-277	160	0.36 0.5	0.58	3.07 ± 0.04 78 ± 1	3.94 100	1.93 ± 0.04 49 ± 1	1.61 ± 0.04 41 ± 1	2.44	Fig. B	180
XFC215-347/480-277	215	0.46 0.64	0.77	3.07 ± 0.04 78 ± 1	4.06 103	1.93 ± 0.04 49 ± 1	1.61 ± 0.04 41 ± 1	2.54	Fig. B	180
XFC300-347/480-277	300	0.69 0.91	1.08	2.17 ± 0.04 55 ± 1	3.43 87	2.64 ± 0.04 49 ± 1	2.21 ± 0.04 41 ± 1	3.46	Fig. B	180
XFC450-347/480-277	450	1 1.38	1.62	2.95 ± 0.04 75 ± 1	4.33 110	2.64 ± 0.04 49 ± 1	2.21 ± 0.04 41 ± 1	4.69	Fig. B	180
XFC675-347/480-277	675	1.48 2.04	2.43	3.54 ± 0.04 90 ± 1	4.92 125	2.64 ± 0.04 49 ± 1	2.21 ± 0.04 41 ± 1	5.39	Fig. B	180

For additional options of output current and output voltage, contact your sales representative or send an email to: [SaveEnergy@ERP-Power.com](mailto:SaveEnergy@ERP-Power.com)

### Typical Application Diagram



### Applications

- Area & Roadway lighting
- Factory, Warehouse, and Distribution Center lighting
- Sports & Stage lighting
- Airports & Dockyard lighting



### Features

- Optimized for use with 277 Vac universal input drivers
- Suitable for indoor and outdoor applications
- 180°C maximum case hot spot temperature
- 5 year limited warranty
- Lead type: (AVLV2, AVLVB), Type 3135, 18 AWG (or equivalent), rated 200°C, 600 V insulation rating, stripped by 10mm and tin plated. 347 V lead wire is pre-insulated.
- UL 5085-1, UL 5085-2
- UL CCN: XPTQ2, XPTQ8





YOUR  
**DESIGNATED**  
DRIVER®



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