

DRIVING QUALITY OF LIGHT™



Programmable & Dimmable LED Drivers

Our Target Markets



- Indoor Residential and Commercial lighting



- Outdoor street and area lighting



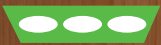
- Office lighting



- Warehouses, manufacturing facilities, and Large retail store application



- Parking garages



- Architectural lighting



- Display / Signage



- Stage Lighting (entertainment, concert)

ERP

POWER
+
LIGHT™

DRIVING QUALITY OF LIGHT™

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 Westlake Village, CA, ERP owns and operates its own ISO 9001 / ISO 14001 / ISO 45001 certified manufacturing facility to ensure quality of design, sourcing, production and testing.

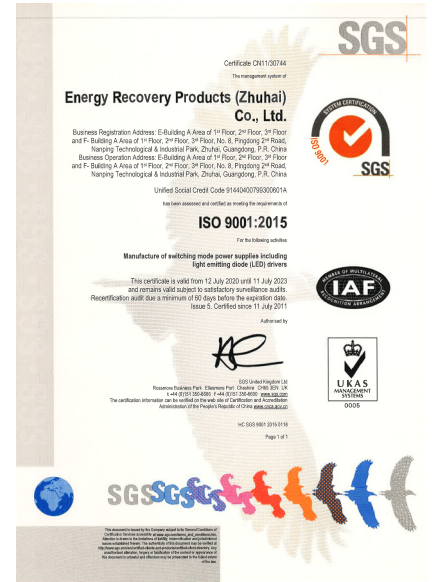
- Industry leader in high-efficiency (high-power-saving) & high-density (small footprint) LED drivers/power supplies
- Product offerings include standard and custom solutions for LED Lighting
- U.S.A. Headquarters in Westlake Village, California, with sales/marketing, R&D, and technical support to serve 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



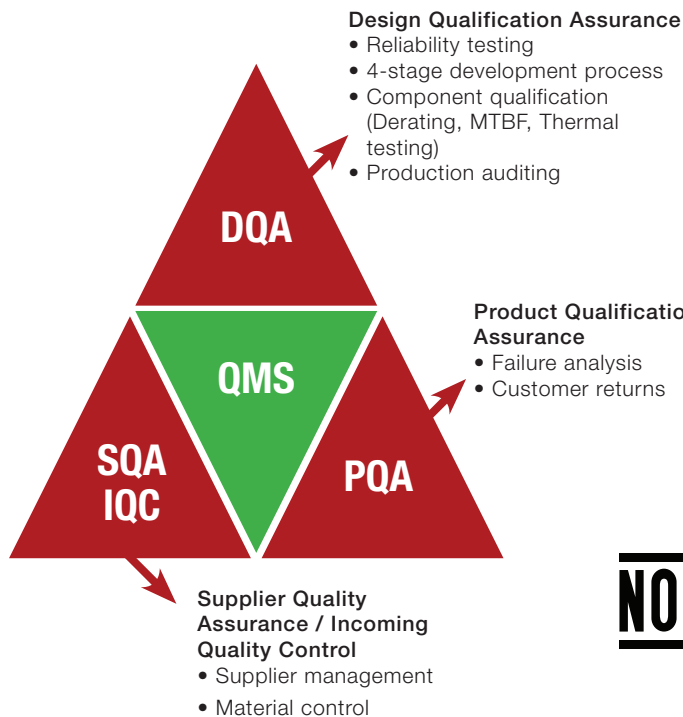
ERP Manufacturing

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 / ISO 14001 / ISO 45001 certified, with regular audits by safety agencies.



ERP Quality

Quality Management Systems (QMS)



Standard Certifications

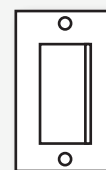
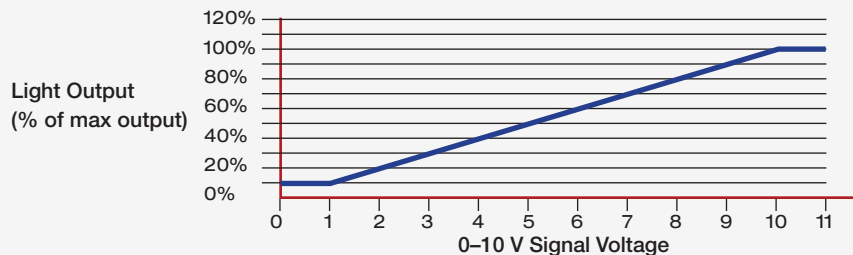
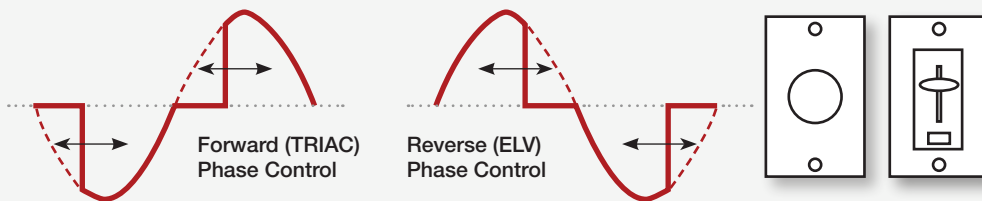
ERP products are designed and manufactured to comply with worldwide international IEC standards for lighting applications, and carry certifications by safety agencies such as UL, CSA and Nemko.

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



Best-In-Class Dimming

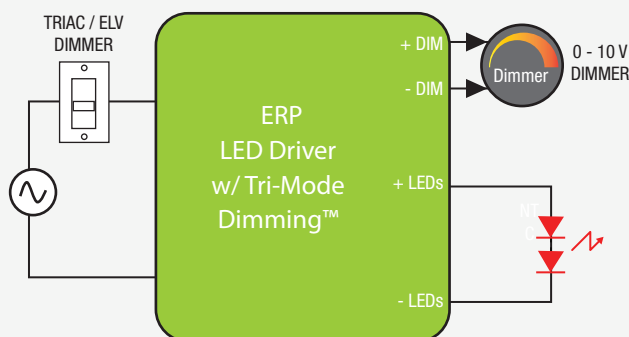
Forward-phase (TRIAC or leading-edge) and reverse-phase (ELV or trailing-edge)



0-10 V control

Tri-Mode Dimming™

The majority of our 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.



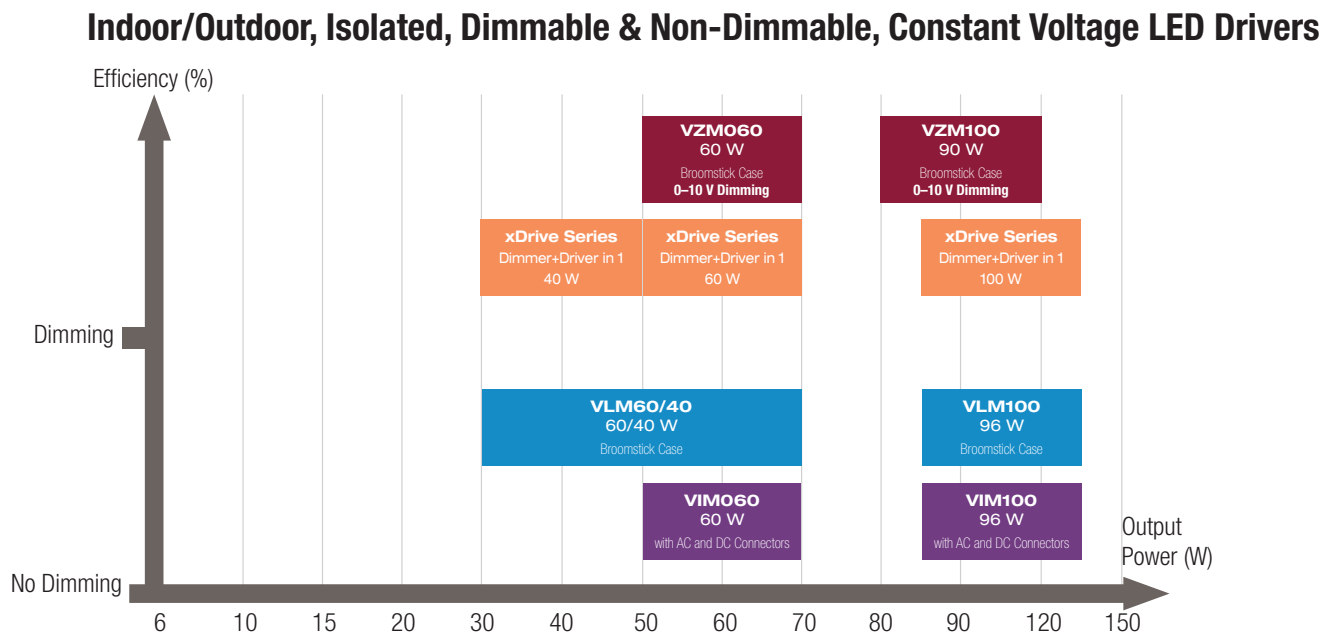
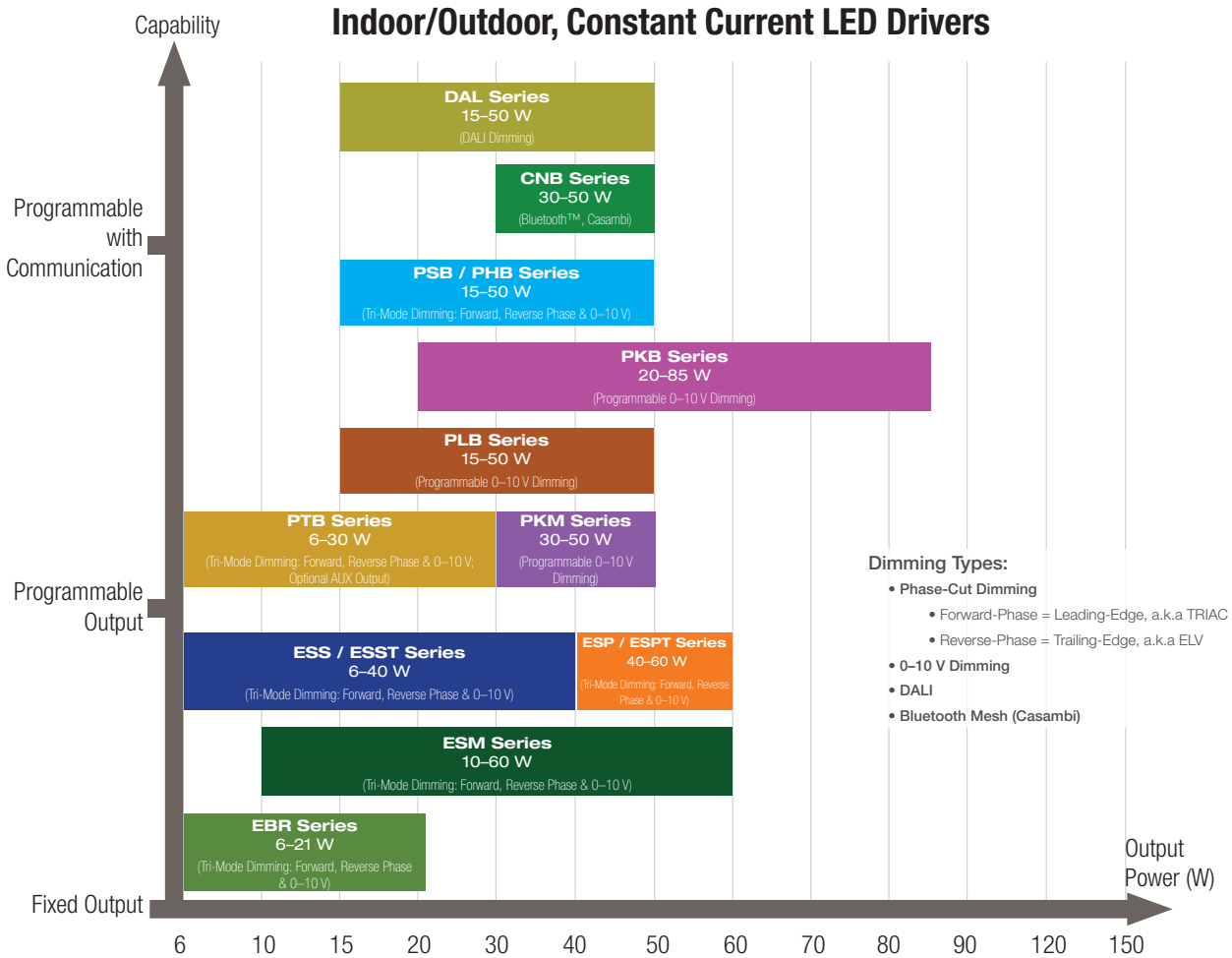
LED Cross-Reference

ERP has developed an extensive cross-reference for 10 different LED manufacturers. This cross-reference can be directly accessed from the ERP website at 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 10 LED manufacturers whose LEDs have been cross-referenced to some of our LED drivers.

	<p>CITIZEN</p>	
		
	<p>LUMILEDS</p>	<p>XICATO AUTHORIZED DISTRIBUTOR</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.

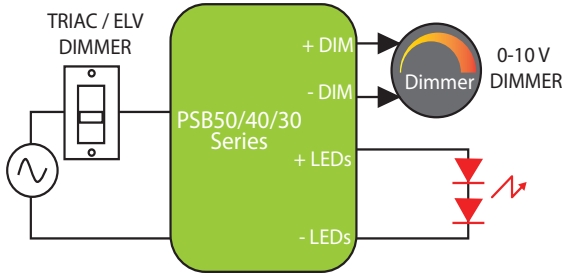


PSB SERIES 15 W – 50 W

Programmable, Constant Current, Class 2 / Class II LED Drivers
with Tri-Mode Dimming™ (TRIAC, ELV and 0–10 V)

Nominal Input Voltage	Max. Output Power	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 & 277 Vac, 220–240 Vac	50 W	up to 90% typical	90 °C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase, & Programmable 0–10 V	1–100% (% of Iout)	300 ms typical

Typical Application Diagram



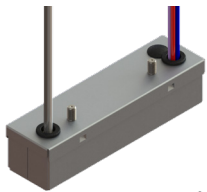
Side Leads

PSBXXW Models

L 98.5 x W 26.0 x H 21.85 mm
(L 3.88 x W 1.02 x H 0.86 in.)

PSBXXE Models

L 107.7 x W 26.0 x H 21.85 mm
(L 4.24 x W 1.02 x H 0.86 in.)



Bottom Leads with Studs: “-S” Suffix

L 98.5 x W 26.0 x H 23.7 mm
(L 3.88 x W 1.02 x H 0.93 in.)



Terminal Blocks: “-T” Suffix

L 154.2 x W 26.2 x H 21.85 mm
(L 6.07 x W 1.03 x H 0.86 in.)



Features

- Non-linear 0–10 V dimming profile with dim-to-off pre-loaded by default (10 V to 9.0 V = 100%, 1.5 V to 0.7 V = 1%, < 0.7 V = dim-to-off)
- UL Class P
- Class 2 output / Class II power supply
- Lifetime: 50,000 hours @ Tc = 75 °C
- 90 °C maximum case hot spot temperature
- IP20-rated case with silicone-based potting
- No TRIAC/ELV dimming for PSBXXE models, only 0–10 V dimming
- Surge protection:
 - IEC61000-4-5: 2 kV line to line / 2 kV line to earth
 - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

ERP Part Number	Nominal Input Voltage (Vac)	Max. Output Power (W)	Iout (mA)	Vout Min. (Vdc)	Vout Nom. (Vdc)	Vout Max. (Vdc)	Open Loop (No Load) Voltage (Vdc)
120 & 277 VAC NOMINAL INPUT VOLTAGE							
PSB15W							
PSB15W-0300-38	120 & 277	11.4	150 to 300	26	32	38	50
PSB30W							
PSB30W-0700-42	120 & 277	29.4	350 to 700	28	37.8	42	50
PSB30W-1050-27	120 & 277	28.4	525 to 1050	18	24.3	27	35
PSB30W-0700-34	120 & 277	23.8	350 to 700	23	30.6	34	44.2
PSB30W-0700-42-S	120 & 277	29.4	350 to 700	28	37.8	42	50
PSB30W-1050-27-S	120 & 277	28.4	525 to 1050	18	24.3	27	35
PSB30W-0700-34-S	120 & 277	23.8	350 to 700	23	30.6	34	44.2
PSB40W							
PSB40W-1400-27	120 & 277	37.8	700 to 1400	18	24.3	27	35
PSB40W-1400-27-S	120 & 277	37.8	700 to 1400	18	24.3	27	35
PSB50W							
PSB50W-0850-56	120 & 277	47.6	425 to 850	38	50.4	56	60
PSB50W-1200-42	120 & 277	50.4	600 to 1200	28	37.8	42	50
PSB50W-1400-34	120 & 277	47.6	700 to 1400	23	30.6	34	44.2
PSB50W-0850-56-S	120 & 277	47.6	425 to 850	38	50.4	56	60
PSB50W-1200-42-S	120 & 277	50.4	600 to 1200	28	37.8	42	50
PSB50W-1400-34-S	120 & 277	47.6	700 to 1400	23	30.6	34	44.2
220–240 VAC NOMINAL INPUT VOLTAGE							
PSB30E							
PSB30E-0700-42-T	220–240	29.4	350 to 700	28	37.8	42	50
PSB50E							
PSB50E-1200-42-T	220–240	50.4	600 to 1200	28	37.8	42	50

Programming

- Current: 100% to 50% in each voltage range
- Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles
- Fully programmable and selectable 0–10 V dimming profiles: Non-linear with dim-to-off, Logarithmic, Non-Linear without dim-to-off

Typical Applications

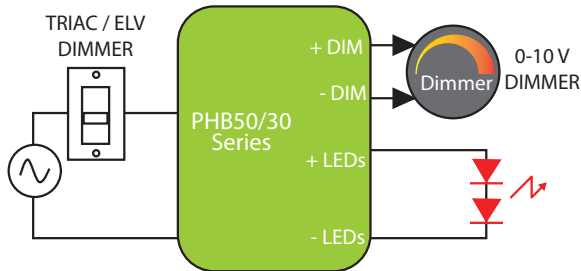
- Commercial lighting
- Residential lighting
- Architectural lighting
- Indoor Lighting

PHB SERIES 30 W & 50 W

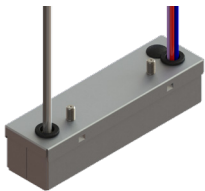
High Performance, Programmable, Constant Current, Class 2 / Class II LED Drivers with Tri-Mode Dimming™ (TRIAC, ELV and 0–10 V)

Nominal Input Voltage	Max. Output Power	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 & 277 Vac	50 W	up to 90% typical	90 °C (measured at the hot spot)	< 20%	> 0.9	Programmable Forward-Phase, Reverse-Phase, & 0–10 V	1–100% (% of Iout)	300 ms typical

Typical Application Diagram



Side Leads
L 103.5 x W 26.2 x H 23.85 mm
(L 4.07 x W 1.03 x H 0.94 in.)



Bottom Leads with Studs: “-S” Suffix
L 103.5 x W 26.2 x H 23.85 mm
(L 4.07 x W 1.03 x H 0.94 in.)



Features

- Ripple < 10% @ 20% & 100% load for TRIAC, ELV, and 0–10 V
- Turn-on at 1% Iout for TRIAC, ELV, and 0–10 V dimming
- Programmable conduction angles with turn-on & turn-off for TRIAC & ELV
- Programmable 0–10 V dimming profile
- Non-linear 0–10 V dimming profile with dim-to-off pre-loaded by default (10 V to 9.0 V = 100%, 1.5 V to 0.7 V = 1%, < 0.7 V = dim-to-off)
- UL Class P
- Class 2 output / Class II power supply
- Lifetime: 50,000 hours @ Tc ≤ 75°C
- 90°C maximum case hot spot temperature
- IP20-rated case with silicone-based potting
- Surge protection:
 - IEC61000-4-5: 2 kV line to line / 2 kV line to earth
 - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

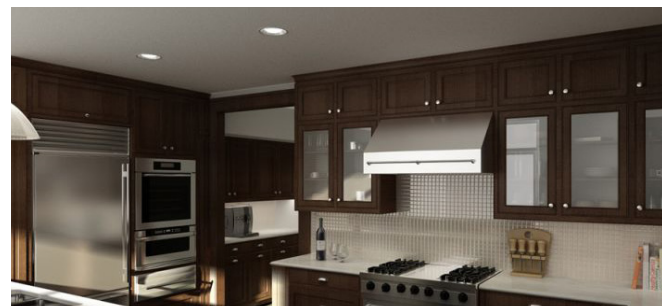
ERP Part Number	Nominal Input Voltage (Vac)	Max. Output Power (W)	Iout (mA)	Vout Min. (Vdc)	Vout Nom. (Vdc)	Vout Max. (Vdc)	Open Loop (No Load) Voltage (Vdc)
120 & 277 VAC NOMINAL INPUT VOLTAGE							
PHB30W							
PHB30W-0500-42	120 & 277	21.0	250 to 500	28	37.8	42	50
PHB30W-0700-42	120 & 277	29.4	350 to 700	28	37.8	42	50
PHB30W-0500-42-S	120 & 277	21.0	250 to 500	28	37.8	42	50
PHB30W-0700-42-S	120 & 277	29.4	350 to 700	28	37.8	42	50
PHB50W							
PHB50W-0850-56	120 & 277	47.6	425 to 850	38	50.4	56	60
PHB50W-1200-42	120 & 277	50.4	600 to 1200	28	37.8	42	50
PHB50W-0850-56-S	120 & 277	47.6	425 to 850	38	50.4	56	60
PHB50W-1200-42-S	120 & 277	50.4	600 to 1200	28	37.8	42	50

Programming

- Current: 100% to 50% in each voltage range
- Data log read: Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles
- Fully programmable and selectable 0–10 V dimming profiles: Non-linear with dim-to-off, Logarithmic, Non-Linear without dim-to-off
- Programmable conduction angles with turn-on & turn-off for TRIAC & ELV

Typical Applications

- Commercial lighting
- Architectural lighting
- Residential lighting
- Indoor Lighting



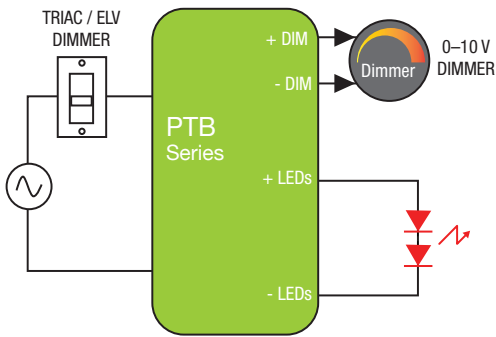
PTB SERIES 10 W – 30 W

Programmable, Constant Current, Class 2

LED Drivers with Enhanced Tri-Mode Dimming™ (TRIAC, ELV & 0–10 V)

Input Voltage	Max. Output Power	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120–277 Vac	30 W	up to 90% typical	90 °C (measured at the hot spot)	< 20%	> 0.9	Programmable Forward-Phase, Reverse-Phase, & 0–10 V	1–100% (% of Iout)	300 ms typical

Typical Application Diagram



Side Leads
L 70 x W 40 x H 29.5 mm
(L 2.76 x W 1.57 x H 1.16 in.)



Features

- UL Class 2 power supply
- Lifetime: 50,000 hours @ Tc = 75°C
- 90°C maximum case hot spot temperature
- IP20-rated case with silicone-based potting
- Surge protection:
 - IEC61000-4-5: 2 kV line to line / 2 kV line to earth
 - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- Meets IEEE 1789-2015 “no impact” recommended practices for flicker
- Mounting clips for multiple mounting methods

ERP Part Number	Input Voltage (Vac)	Max. Output Power (W)	Iout (mA)	Default Programmed Current (mA)	Vout Min. (Vdc)	Vout Max. (Vdc)
PTB10W						
PTB10W-0250-42-ZN [®]	120–277	10.5	150 to 250	250	28	42
PTB15W						
PTB15W-0350-42-FN [®]	120–277	14.7	210 to 350	250	28	42
PTB20W						
PTB20W-0420-42-ZN [®]	120–277	17.6	250 to 420	350	28	42
PTB30W						
PTB30W-0500-42-FN [®]	120–277	21.0	300 to 500	350	28	42
PTB30W-0700-42-FN [®]	120–277	29.4	420 to 700	500	28	42
PTB30W-0700-42-ZN [®]	120–277	29.4	420 to 700	500	28	42

Suffix for the different options:

1. “-ZN”: Dim-to-off capable; side leads
2. “-FN”: No dim-to-off; side leads

Notes:

- Models with the “-Z1” and “ZN” suffix feature dim-to-off and exhibit a default non-linear 0–10 V dimming profile: 10 V to 8.2 V = 100%, 1.5 V to 0.7 V = 1%, dim-to-off < 0.7. Dim-to-off is only available on “-Z1” and “-ZN” model numbers.
- By default, each PTB series driver is shipped with 2 metal mounting clips. Additional mounting clips can be ordered separately using the part number PTB-CLIPS-100 or PTB-CLIPS-1K.

Programming

- Audio jack programming
- Current: 100% to 60% in each voltage range
- 0–10 V dimming profiles: linear, non-linear, logarithmic
- Programmable conduction angles with turn-on and turn-off for TRIAC and ELV
- Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles

Typical Applications

- Commercial lighting
- Architectural lighting
- Residential lighting
- Indoor lighting

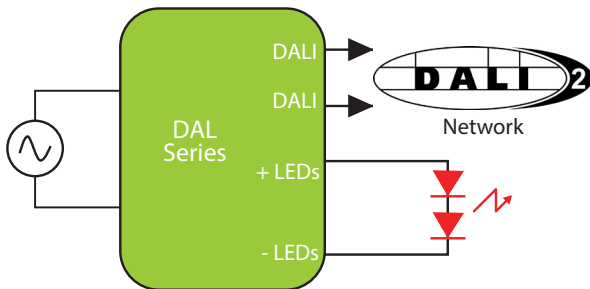


DAL SERIES 30 W & 50 W

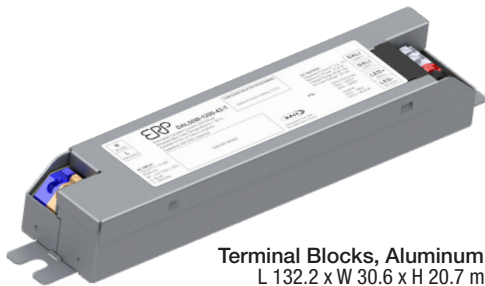
Programmable, Constant Current, Class 2
LED Drivers with DALI Dimming

Nominal Input Voltage	Max. Output Power	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range
120–277 Vac	50 W	up to 90% typical	90 °C (measured at the hot spot)	< 20% (from 100% to 50% of load)	> 0.9 (from 100% to 50% of load)	DALI	1–100% (% of Iout)

Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Max. Output Power (W)	Iout (mA)	Vout Min. (Vdc)	Vout Nom. (Vdc)	Vout Max. (Vdc)	Open Loop (No Load) Voltage (Vdc)
DAL30W							
DAL30W-0600-42-T	120–277	25.2	300 to 600	28	37.8	42	50
DAL50W							
DAL50W-0850-56-T	120–277	47.6	425 to 850	38	50.4	56	60
DAL50W-1200-42-T	120–277	50.4	600 to 1200	28	37.8	42	50



Terminal Blocks, Aluminum Case
L 132.2 x W 30.6 x H 20.7 mm
(L 5.21 x W 1.20 x H 0.81 in.)

Features

- Universal input voltage range
- Ripple < 10% @ 20% & 100% load
- Turn-on: @ 1% Iout
- EMI: Compliant with FCC CFR Title 47 Part 15 Class B at 120 Vac & Class A at 277 Vac and with CE EN55015 (CISPR 15) at 220, 230, and 240 Vac
- Safety, Compliance
 - UL: Class 2 output, Class P
 - CB, CE
 - FCC, ENEC
 - DALI2, Device Type 6 (Parts 101, 102, 207)
- IP20-rated case with silicone-based potting
- Lifetime: 50,000 hours min. at 75 °C case temperature
- Class II power supply
- 90 °C maximum case hot spot temperature

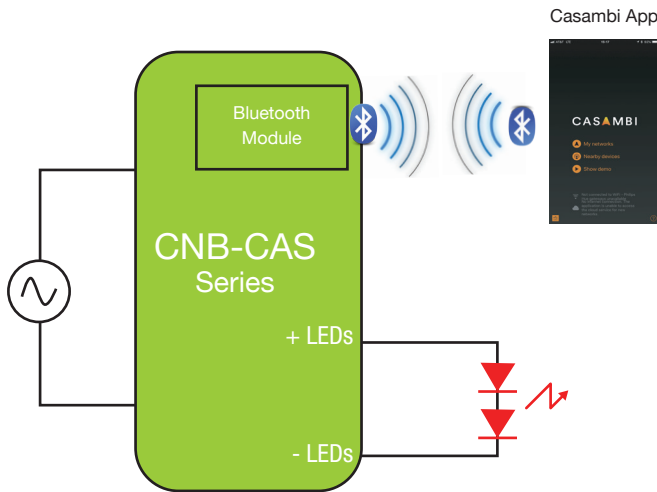


NFC Programming

- Current: 100% to 50% in each voltage range
- Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles

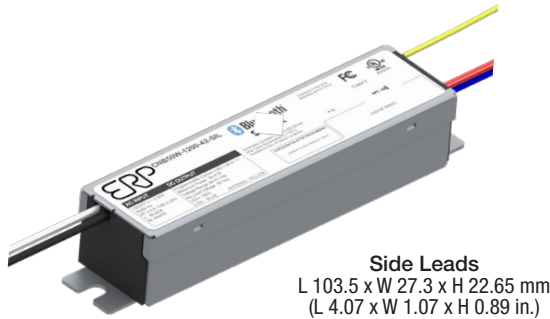
Nominal Input Voltage	Max. Output Power	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 & 277 Vac	50 W	300 mA to 1200 mA	up to 90% typical	90 °C (measured at the hot spot)	< 20%	> 0.9	Bluetooth	1–100%	300 ms typical

Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Max. Output Power (W)	Iout (mA)	Vout Min. (Vdc)	Vout Max. (Vdc)
CNB30W: 21–30 W					
CNB30W-0600-42-CAS	120 & 277	25.2	300 to 600	28	42
CNB50W: 51–60 W					
CNB50W-1200-42-CAS	120 & 277	50.4	600 to 1200	28	42

“-CAS” Suffix: With Casambi Bluetooth firmware, wire whip antenna, Side Leads case



NFC Programming

- Current: 100% to 50% in each voltage range
- Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles

Casambi Bluetooth Mesh Solution

- Wireless lighting controls with simple set-up that anyone can use
- Pre-integrated Bluetooth mesh module enables brands to create multi-way controls and switching without additional wiring; no central gateway required
- Secure, reliable mobile app & software
- Dimming, grouping, many users, schedules, timers
- Virtually unlimited range with mesh
- Download for free; additional services available



Features

- UL Class P
- Class 2 power supply
- Lifetime: 50,000 hours @ Tc ≤ 75 °C
- 90 °C maximum case hot spot temperature
- IP20-rated case with silicone-based potting
- Surge protection:
 - IEC61000-4-5: 2 kV line to line / 2 kV line to earth
 - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

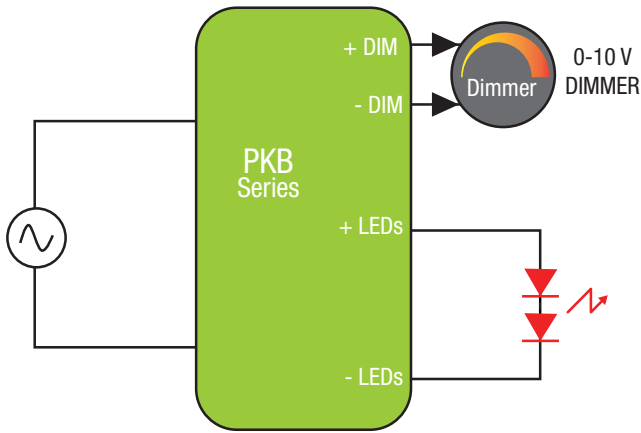
Typical Applications

- Commercial lighting
- Architectural lighting
- Indoor lighting



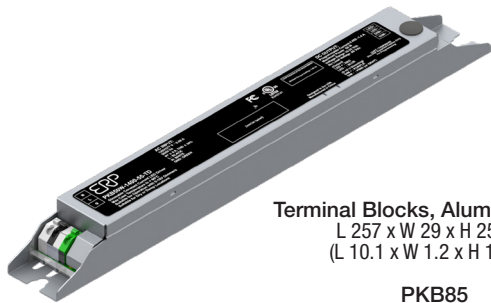
Input Voltage	Max. Output Power	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120–277 Vac	85 W	up to 90% typical	90 °C (measured at the hot spot)	< 20%	> 0.9	Programmable 0–10 V	1–100% (% of Iout)	300 ms typical

Typical Application Diagram



ERP Part Number	Input Voltage (Vac)	Max. Output Power (W)	Iout (mA)	Vout Min. (Vdc)	Vout Nom. (Vdc)	Vout Max. (Vdc)	Open Loop (No Load) Voltage (Vdc)
PKB20W							
PKB20W-0700-55-TN	120 & 277	20	100 to 700	10	49.5	55	60
PKB30W							
PKB30W-1050-55-TN	120 & 277	30	275 to 1050	10	49.5	55	60
PKB50W							
PKB50W-1400-55-TN	120 & 277	50	455 to 1400	10	49.5	55	60
PKB65W							
PKB65W-1800-55-TN	120 & 277	65	591 to 1800	10	49.5	55	60
PKB80W							
PKB85W-2300-55-TN	120–277	85	700 to 2300	10	49.5	55	60

"-TN" Suffix: Terminal Blocks



Terminal Blocks, Aluminum Case
L 257 x W 29 x H 25 mm
(L 10.1 x W 1.2 x H 1.0 in.)

PKB85
L 425 x W 29 x H 25 mm
(L 16.7 x W 1.2 x H 1.0 in.)



Features

- UL Class P
- Class 2 output
- Lifetime: 5 years @ Tc ≤ 75 °C
- 20% maximum ripple current
- 90°C maximum case hot spot temperature
- Surge protection:
 - IEC61000-4-5: 2 kV line to line / 2 kV line to earth
 - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

Programming

- Audio jack programming
- 0–10 V dimming profiles: linear, non-linear, logarithmic
- Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles

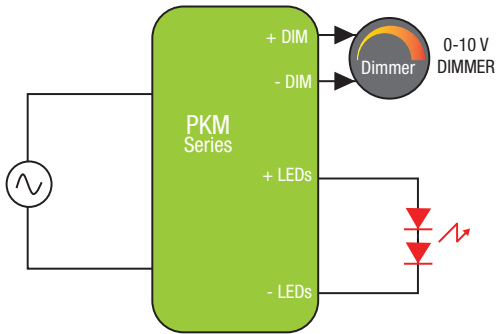
Typical Applications

- Commercial lighting
- Architectural lighting
- Residential lighting
- Indoor lighting



Input Voltage	Max. Output Power	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120–277 Vac	50 W	up to 90% typical	90 °C (measured at the hot spot)	< 20%	> 0.9	Programmable 0–10 V	1–100% (% of Iout)	300 ms typical

Typical Application Diagram



ERP Part Number	Input Voltage (Vac)	Max. Output Power (W)	Iout (mA)	Vout Min. (Vdc)	Vout Nom. (Vdc)	Vout Max. (Vdc)	Open Loop (No Load) Voltage (Vdc)
PKM30W							
PKM30W-1050-55-SN [®]	120–277	30	275 to 1050	10	49.5	55	60
PKM30W-1050-55-TN [®]	120–277	30	275 to 1050	10	49.5	55	60
PKM30W-1050-55-NN [®]	120–277	30	275 to 1050	10	49.5	55	60
PKM50W							
PKM50W-1400-55-SN [®]	120–277	50	455 to 1400	10	49.5	55	60
PKM50W-1400-55-TN [®]	120–277	50	455 to 1400	10	49.5	55	60
PKM50W-1400-55-NN [®]	120–277	50	455 to 1400	10	49.5	55	60

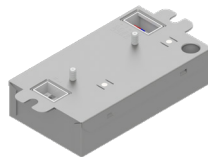
Suffix for the different options:

1. "-SN": Bottom leads w/ studs
2. "-TN": Terminal Blocks w/ studs
3. "-NN": Side leads no studs



Side Leads, No Studs (-NN), Metal Case
L 106.7 x W 60.3 x H 25.3 mm
(L 4.20 x W 2.37 x H 0.99 in.)

Terminal Blocks (-TN), Metal Case
L 106.7 x W 60.3 x H 25.5 mm
(L 4.20 x W 2.37 x H 1.00 in.)



Bottom Leads (-SN), Metal Case
L 106.7 x W 60.3 x H 25.3 mm
(L 4.20 x W 2.37 x H 0.99 in.)



Features

- UL Class P
- Class 2 output
- Lifetime: 5 years @ Tc ≤ 75 °C
- External NTC (negative temperature coefficient) functionality
- 90°C maximum case hot spot temperature
- Surge protection:
 - IEC61000-4-5: 2 kV line to line / 2 kV line to earth
 - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

Programming

- Audio jack programming
- NTC derating profile
- 0–10 V dimming profiles: linear, non-linear, logarithmic
- Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles

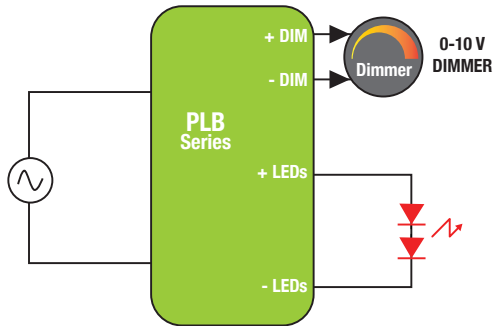
Typical Applications

- Commercial lighting
- Architectural lighting
- Residential lighting
- Indoor lighting



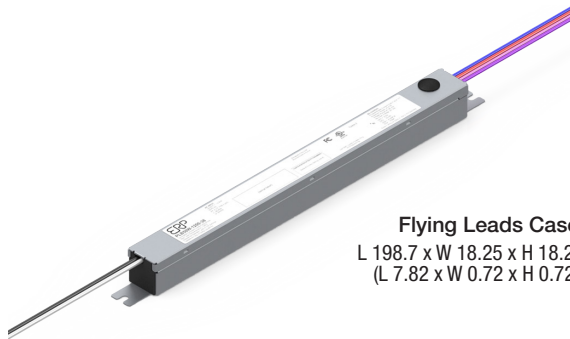
Input Voltage	Max. Output Power	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 & 277 Vac	50 W	up to 90% typical	90 °C (measured at the hot spot)	< 20%	> 0.9	Programmable 0–10 V	1–100% (% of I _{out})	300 ms typical

Typical Application Diagram



ERP Part Number	Input Voltage (Vac)	Max. Output Power (W)	I _{out} (mA)	V _{out} Min. (Vdc)	V _{out} Nom. (Vdc)	V _{out} Max. (Vdc)	Open Loop (No Load) Voltage (Vdc)
PLB15W							
PLB15W-0300-38	120 & 277	11.4	100 to 300	26	32	38	50
PLB30W							
PLB30W-0600-38	120 & 277	22.8	300 to 600	26	32	38	50
PLB50W							
PLB50W-1200-38	120 & 277	45.6	600 to 1200	26	32	38	50

Side leads.



Flying Leads Case
L 198.7 x W 18.25 x H 18.25 mm
(L 7.82 x W 0.72 x H 0.72 in.)



Programming

- Audio jack programming
- Current: 100% to 50% in each voltage range
- 0–10 V dimming profiles: Non-linear with dim-to-off, Logarithmic, Non-Linear without dim-to-off
- Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles

Features

- UL Class P
- Class 2 output
- Lifetime: 5 years @ T_c ≤ 75 °C
- 90 °C maximum case hot spot temperature
- Surge protection:
 - IEC61000-4-5: 2 kV line to line / 2 kV line to earth
 - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

Typical Applications

- Commercial lighting
- Architectural lighting
- Residential lighting
- Indoor lighting



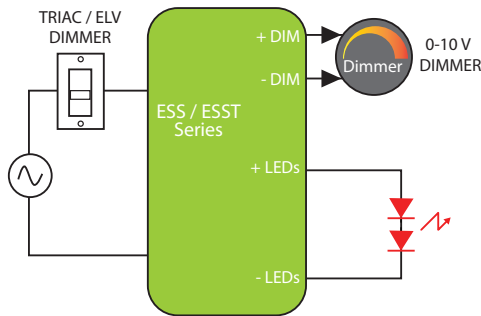
ESS / ESST SERIES 6 W – 40 W

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

Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency
120–277 Vac	40 W	6 to 56 Vdc	180 mA to 2.1 A Constant Current	up to 87% typical

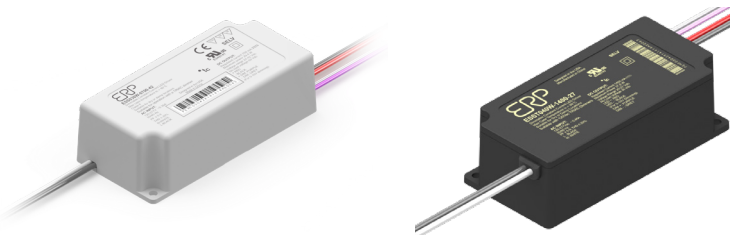
Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
90 °C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase, & 0–10 V	1–100% (% of Iout)	400 ms

Typical Application Diagram



ESS Plastic Case
L 84 x W 40 x H 25 mm
(L 3.30 x W 1.57 x H 0.99 in.)

ESST Thermally Enhanced Plastic Case (ESST040 ONLY)
L 84 x W 40 x H 27 mm
(L 3.30 x W 1.57 x H 1.06 in.)



Features

- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0–10 V dimmers
- TRIAC and ELV dimming at 120 Vac only
- 90 °C maximum case hot spot temperature
- Class 2 power supply
- Lifetime: 50,000 hours at 70 °C case hot spot temperature (some models have higher lifetime. Check lifetime curves in spec sheet)
- IP64-rated (IP66 for ESST) case with silicone-based potting
- 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) and Class A (277 Vac), and EN55015 (CISPR 15) at 220, 230, and 240 Vac
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

ERP Part Number	Nominal Input Voltage (Vac)	Iout (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
ESS010W: up to 10 W					
ESS010W-0180-42	120–277	180	7.6	24	42
ESS010W-0180-42-XL ¹	120–277	180	7.6	24	42
ESS010W-0200-42	120–277	200	8.4	24	42
ESS010W-0200-42-XL ¹	120–277	200	8.4	24	42
ESS010W-0250-42	120–277	250	10.5	24	42
ESS010W-0250-42-Z1 ¹	120–277	250	10.5	24	42
ESS010W-0350-24	120–277	350	8.4	14	24
ESS010W-0500-12	120–277	500	6.0	6	12
ESS010W-0500-18	120–277	500	9.0	10	18
ESS010W-0700-13-Z1 ¹	120–277	700	9.1	8	13
ESS010W-0750-12	120–277	750	9.0	6	12
ESS015W: 11–15 W					
ESS015W-0300-42	120–277	300	12.6	24	42
ESS015W-0300-42-XL ¹	120–277	300	12.6	24	42
ESS015W-0350-32	120–277	350	11.2	21	32
ESS015W-0350-42	120–277	350	14.7	24	42
ESS015W-0350-42-XL ¹	120–277	350	14.7	24	42
ESS015W-0350-42-Z1 ¹	120–277	350	14.7	24	42
ESS015W-0440-25	120–277	440	11.0	19	25
ESS015W-0440-34	120–277	440	15.0	24	34
ESS015W-0700-18	120–277	700	12.6	10	18
ESS015W-1000-12	120–277	1000	12.0	6	12
ESS015W-1050-14	120–277	1050	14.7	8	14
ESS015W-1050-14-Z1 ¹	120–277	1050	14.7	8	14
ESS020W: 16–20 W					
ESS020W-0350-56	120–277	350	19.6	40	56
ESS020W-0400-42	120–277	400	16.8	24	42
ESS020W-0400-42-XL ¹	120–277	400	16.8	24	42
ESS020W-0450-42	120–277	450	18.9	24	42
ESS020W-0500-32	120–277	500	16.0	21	32
ESS020W-0500-34	120–277	500	17.0	24	34
ESS020W-0700-24	120–277	700	16.8	14	24
ESS020W-1400-14	120–277	1400	19.6	8	14
ESS020W-1400-14-Z1 ¹	120–277	1400	19.6	8	14
ESS030W: 21–30 W					
ESS030W-0500-42	120–277	500	21.0	24	42
ESS030W-0500-42-Z1 ¹	120–277	500	21.0	24	42
ESS030W-0550-42	120–277	550	23.1	24	42
ESS030W-0550-42-XL ¹	120–277	550	23.1	24	42
ESS030W-0620-42	120–277	620	26.0	24	42
ESS030W-0700-32	120–277	700	22.4	21	32
ESS030W-0700-42	120–277	700	29.4	24	42
ESS030W-0700-42-XL ¹	120–277	700	29.4	24	42
ESS030W-0700-42-Z1 ¹	120–277	700	29.4	24	42
ESS030W-0900-27	120–277	900	24.3	20	27
ESS030W-0900-32	120–277	900	28.8	21	32
ESS030W-1050-21	120–277	1050	22.1	14	21
ESS030W-1100-27	120–277	1100	29.7	20	27
ESS030W-1750-14	120–277	1750	24.5	8	14
ESS030W-1750-14-Z1 ¹	120–277	1750	24.5	8	14
ESST040W: 31–40 W					
ESST040W-0800-42	120–277	800	33.6	24	42
ESST040W-0850-42	120–277	850	35.7	24	42
ESST040W-0900-42	120–277	900	37.8	24	42
ESST040W-1400-24	120–277	1400	33.6	14	24
ESST040W-1400-27	120–277	1400	37.8	20	27

Suffix for the different options:

1. "-Z1" Suffix: Non-linear 0–10 V dimming profile (10 V to 8.1 V = 100%, 1 V to 0.8 V = 1%, Dim-to-off < 0.8 V)
2. "-XL" Suffix: Extended wire leads 12 in. (300 mm) long

Typical Applications

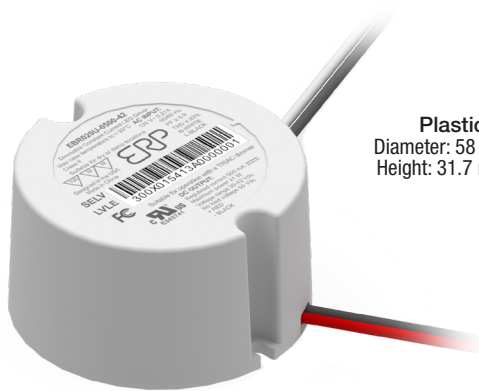
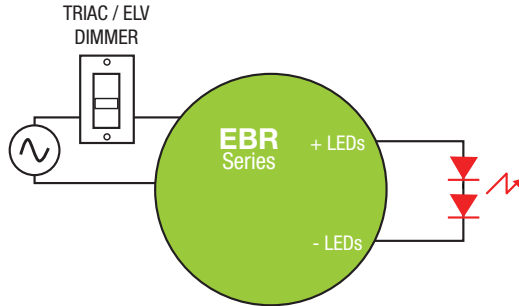
- Indoor & Outdoor
- Commercial lighting
- Architectural lighting
- Recessed lighting (downlights)
- Residential lighting
- Office Lighting

EBR SERIES 8 W – 21 W

Constant Current LED Drivers with Deep TRIAC and ELV Dimming (1–100%) 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 85% typical	90 °C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase	1–100% (% of Iout)	200 ms

Typical Application Diagram



Plastic Case
Diameter: 58 mm (2.28 in.)
Height: 31.7 mm (1.25 in.)

ERP Part Number	Nominal Input Voltage (Vac)	Iout (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
120 VAC NOMINAL INPUT VOLTAGE					
EBR010U: 8 –10 W					
EBR010U-0200-42	120	200	8.4	30	42
EBR010U-0250-42	120	250	10.5	30	42
EBR015U: 11–15 W					
EBR015U-0300-42	120	300	12.6	30	42
EBR015U-0350-42	120	350	14.7	30	42
EBR020U: 16–21 W					
EBR020U-0400-42	120	400	16.8	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
220–240 VAC NOMINAL INPUT VOLTAGE					
EBR015E: 11–15 W					
EBR015E-0350-42-CE	220–240	350	14.7	30	42



Features

- Compatible with industry standard phase-cut dimmers: TRIAC (forward-phase or leading-edge) and ELV (reverse-phase or trailing-edge)
- Lifetime: 50,000 hours at 70 °C case hot spot temperature (some models have higher lifetime. Check lifetime curves in spec sheet)
- 90 °C maximum case hot spot temperature
- Low acoustic noise of 20 dBA
- Class 2 power supply
- 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, 230 and 240 Vac
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- IP20-rated case with silicon-based potting

Typical Applications

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

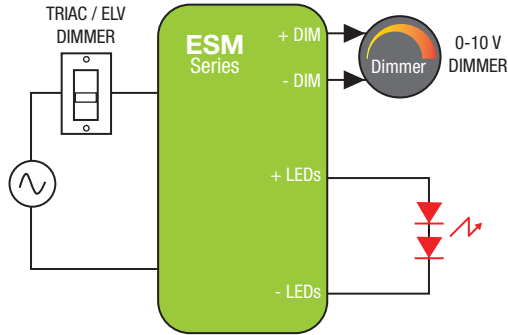


ESM SERIES 10 W – 60 W

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

Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120–277 Vac	60 W	8 to 56 Vdc	280 mA to 1.4 A Constant Current	up to 87% typical	90 °C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase, & 0–10 V	1–100% (% of Iout)	400 ms

Typical Application Diagram



Metal Case
L 110 x W 60 x H 26 mm
(L 4.33 x W 2.36 x H 1.02 in.)



Features

- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0–10 V dimmers
- TRIAC and ELV dimming at 120 Vac only
- 90 °C maximum case temperature
- Class 2 power supply
- Lifetime: 50,000 hours at 70 °C case temperature (some models have higher lifetime. Check lifetime curves in spec sheet)
- IP20-rated case with silicone-based potting
- 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) and Class A (277 Vac)
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) & CA Title 24 technical requirements
- Worldwide safety approvals

ERP Part Number	Nominal Input Voltage (Vac)	Iout (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
ESM020W: 11–20 W					
ESM020W-0350-42	120–277	350	14.7	24	42
ESM020W-0440-34	120–277	440	15.0	19	34
ESM030W: 21–30 W					
ESM030W-0500-42	120–277	500	21.0	24	42
ESM030W-0550-42	120–277	550	23.1	24	42
ESM030W-0700-42	120–277	700	29.4	24	42
ESM040W: 31–40 W					
ESM040W-0800-42	120–277	800	33.6	24	42
ESM040W-0900-42	120–277	900	37.8	24	42
ESM040W-0940-43	120–277	940	40.4	32	43
ESM050W: 41–50 W					
ESM050W-1050-42	120–277	1050	44.1	24	42
ESM050W-1200-42	120–277	1200	50.4	24	42
ESM050W-1400-34	120–277	1400	47.6	23	34
ESM060W: 51–60 W					
ESM060W-1400-42	120–277	1400	58.8	24	42

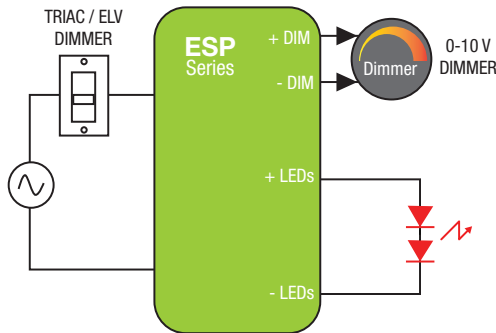
Typical Applications

- Indoor & Outdoor
- Commercial lighting
- Architectural lighting
- Recessed lighting (downlights)
- Residential lighting
- Office Lighting



Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120–277 Vac, 220–240 Vac	60 W	21 to 56 Vdc	700 mA to 1.4 A Constant Current	up to 87% typical	90 °C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase, & 0–10 V	1–100% (% of Iout)	400 ms

Typical Application Diagram



Plastic Case
L 90 x W 60 x H 27.2 mm
(L 3.54 x W 2.36 x H 1.07 in.)



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 at 120 Vac only
- ESPxxxE models: ELV and 0–10 V dimming only
- 90 °C maximum case hot spot temperature (some models have higher lifetime. Check lifetime curves in spec sheet)
- Class 2 power supply
- Lifetime: 50,000 hours at 70 °C case hot spot temperature
- IP66-rated case with silicone-based potting
- 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) and Class A (277 Vac), and EN55015 (CISPR 15) at 220, 230, and 240 Vac
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

ERP Part Number	Nominal Input Voltage (Vac)	Iout (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
120 & 277 VAC NOMINAL INPUT VOLTAGE					
ESP040W: 31–40 W					
ESP040W-0700-56	120–277	700	39.2	40	56
ESP040W-0800-42	120–277	800	33.6	24	42
ESP040W-0900-42	120–277	900	37.8	24	42
ESP040W-0940-43	120–277	940	40.4	35	43
ESP050W: 41–50 W					
ESP050W-1050-42	120–277	1050	44.1	24	42
ESP050W-1200-42	120–277	1200	50.4	24	42
ESP050W-1400-32	120–277	1400	44.8	21	32
ESP050W-1400-34	120–277	1400	47.6	23	34
ESP060W: 51–60 W					
ESP060W-1400-42	120–277	1400	58.8	24	42
220–240 VAC NOMINAL INPUT VOLTAGE					
ESP040E: 31–40 W					
ESP040E-0850-42	220–240	850	35.7	24	42
ESP060E: 51–60 W					
ESP060E-1400-42	220–240	1400	58.8	24	42

1. The ESP driver case can also be mounted by using two metal clips, one on each short side. The ordering part number for the two metal clips is ESP-CLIPS. By default, the ESP driver is shipped without metal clips. When metal clips are required, add ESP-CLIPS to your order.

Typical Applications

- Indoor & Outdoor
- Commercial lighting
- Architectural lighting
- Recessed lighting (downlights)
- Residential lighting
- Office Lighting

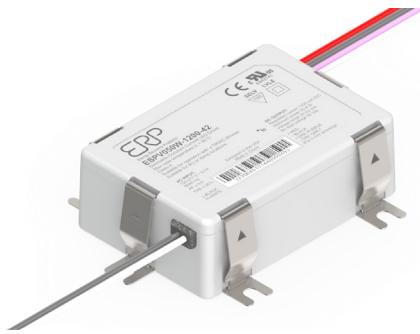
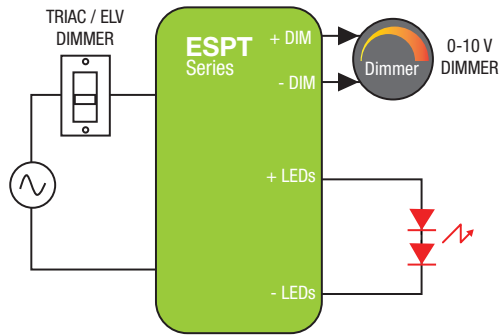


ESPT SERIES 40 W – 60 W

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

Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120–277 Vac	60 W	24 to 56 Vdc	700 mA to 1.4 A Constant Current	up to 87% typical	90 °C (measured at the hot spot)	< 20%	> 0.9	Forward-Phase, Reverse-Phase, & 0–10 V	1–100% (% of Iout)	400 ms

Typical Application Diagram



Plastic Case
L 87 x W 60 x H 30 mm
(L 3.43 x W 2.36 x H 1.18 in.)



Features

- Same features as the ESP series but with a thermally-enhanced plastic case
- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0–10 V dimmers
- TRIAC and ELV dimming at 120 Vac only
- 90 °C maximum case hot spot temperature
- Class 2 power supply
- Lifetime: 50,000 hours at 70 °C case hot spot temperature (some models have higher lifetime. Check lifetime curves in spec sheet)
- IP66-rated case with silicone-based potting
- Two 0–10 V dimming profiles are available:
 - Linear 0–10 V dimming: 10 V = 100%, 1 V = 10%, 0.1 V = 1%.
 - Non-linear 0–10 V dimming: 10 V to 8.1 V = 100%, 1 V to 0.8 V = 1%, < 0.8 V dim-to-off.
- 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) and Class A (277 Vac)
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) & CA Title 24 technical requirements

ERP Part Number	Nominal Input Voltage (Vac)	Iout (mA)	Max. Output Power (W)	Output Voltage Range (Vdc)	
				min.	max.
ESPT050W: 41–50 W					
ESPT050W-1050-42-Z1 ⁽¹⁾	120–277	1050	44.1	24	42
ESPT050W-1200-42-Z1 ⁽¹⁾	120–277	1200	50.4	24	42
ESPT050W-1400-34	120–277	1400	47.6	23	34
ESPT060W: 51–60 W					
ESPT060W-1400-42-Z1 ⁽¹⁾	120–277	1400	58.8	24	42

1. ESPT models with the “-Z1” suffix exhibit a non-linear 0–10 V dimming profile with dim-to-off: 10 V to 8.1 V = 100%, 1 V to 0.8 V = 1%, < 0.8 V dim-to-off.
2. The ESPT driver case must be mounted by using a minimum of two metal clips. By default, the ESPT driver is shipped with 2 metal clips. Additional metal clips can be ordered with the following part numbers:
 - ESPT-CLIPS-100: bag of 100 clips
 - ESPT-CLIPS-1k: bag of 1000 clips

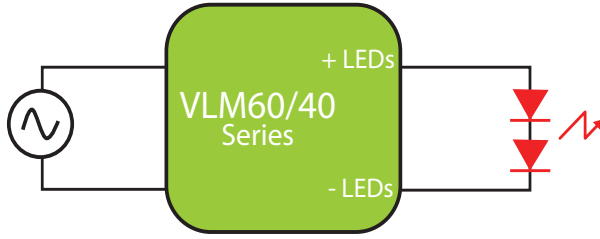
Typical Applications

- Indoor & Outdoor
- Commercial lighting
- Architectural lighting
- Recessed lighting (downlights)
- Residential lighting
- Office Lighting



Nominal Input Voltage	Max. Output Power	Nominal Output Voltage	Max. Output Current	Efficiency	Max. Case Temperature	THD	Power Factor
120 & 277 Vac, 220–240 Vac	60 W	12, 24, 48 Vdc	5, 2.5, 1.25 A	up to 90% 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)
120 & 277 VAC NOMINAL INPUT VOLTAGE				
VLM40W				
VLM40W-12	120 & 277	40.0	12	3.3
VLM40W-24	120 & 277	40.0	24	1.67
VLM40W-48	120 & 277	40.0	48	0.83
VLM60W				
VLM60W-12	120 & 277	60.0	12	5
VLM60W-24	120 & 277	60.0	24	2.5
VLM60W-36	120 & 277	60.0	36	1.67
VLM60W-48	120 & 277	60.0	48	1.25
220–240 VAC NOMINAL INPUT VOLTAGE				
VLM40E				
VLM40E-24-T ⁽¹⁾	220–240	40.0	24	1.67
VLM40E-48-T ⁽¹⁾	220–240	40.0	48	0.83
VLM60E				
VLM60E-24	220–240	60.0	24	2.5
VLM60E-24-T ⁽¹⁾	220–240	60.0	24	2.5
VLM60E-48-T ⁽¹⁾	220–240	60.0	48	1.25

1. Strain reliefs for “-T” models can be ordered using part number SR1. Order quantity for SR1 is per strain relief, and 2 strain reliefs are needed for each driver.

Suffix for the different mounting options:

- a) NO suffix: side leads
- b) “-T”: Terminal blocks



Models with Flying Leads,
Aluminum Case (VLMXXW Models)
L 130 x W 19.65 x H 19.8 mm
(L 5.12 x W 0.77 x H 0.78 in.)



Models with “-T” Suffix (Terminal Blocks)
Aluminum case
L 183.2 x W 19.9 x H 19.85 mm
(L 7.12 x W 0.78 x H 0.78 in.)



Features

- Very high power density of 20 W/in³
- Class 2 power supply
- Class II power supply per IEV 61347
- UL Class P
- IP20-rated case with silicone-based potting
- 90 °C maximum case hot spot temperature
- Lifetime: 50,000 hours min. at 70 °C case temperature
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- Worldwide safety approvals
- Additional safety approvals when using the optional strain reliefs for models with “-T” suffix

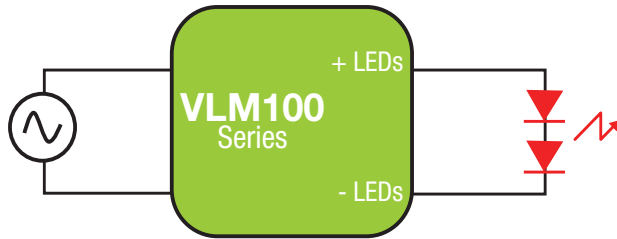
Typical Applications

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



Nominal Input Voltage	Max. Output Power	Nominal Output Voltage	Max. Output Current	Efficiency	Max. Case Temperature	THD	Power Factor
120 & 277 Vac, 220–240 Vac	96 W	12, 24, 48 Vdc	8, 4, 2 A	up to 92% typical	90 °C (measured at the hot spot)	< 20%	> 0.9

Typical Application Diagram



**Models with Flying Leads,
Aluminum Case (VLM100W Models)**
L 137 x W 26 x H 19.8 mm
(L 5.39 x W 1.02 x H 0.77 in.)



Models with "-T" Suffix (Terminal Blocks)
Aluminum case
L 193.2 x W 26.2 x H 19.85 mm
(L 7.60 x W 1.03 x H 0.78 in.)

ERP Part Number	Nominal Input Voltage (Vac)	Pout Max (W)	Vout Nom (Vdc)	Iout Ma (A)
120 & 277 VAC NOMINAL INPUT VOLTAGE				
VLM100W				
VLM100W-12 ⁽¹⁾	120 & 277	96.0	12	8
VLM100W-24	120 & 277	96.0	24	4
VLM100W-36	120 & 277	96.0	36	2.7
VLM100W-48	120 & 277	96.0	48	2
220–240 VAC NOMINAL INPUT VOLTAGE				
VLM100E				
VLM100E-24	220–240	96.0	24	4
VLM100E-48	220–240	96.0	48	2
VLM100E-24-T ⁽²⁾	220–240	96.0	24	4
VLM100E-48-T ⁽²⁾	220–240	96.0	48	2

1. VLM100W-12 is not Class 2 because the over-current protection of this model exceeds the 5A UL Class 2 limit.

2. Strain reliefs for "-T" models can be ordered using part number SR2. Order quantity for SR2 is per strain relief, and 2 strain reliefs are needed for each driver.

Suffix for the different mounting options:

- a) NO suffix: side leads
- b) "-T": Terminal blocks

Typical Applications

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



Features

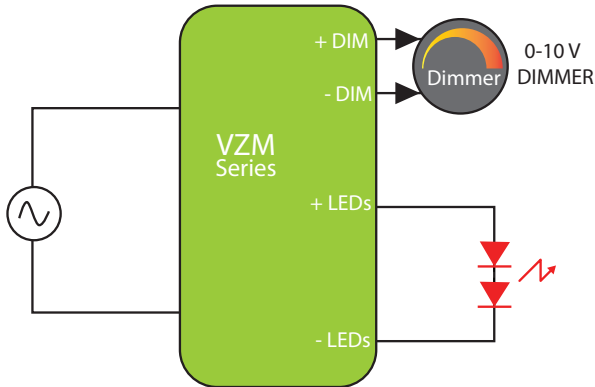
- Very high power density of 24 W/in³
- Class 2 power supply
- Class II power supply per IEC 61347
- IP20-rated case with silicone-based potting
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- 90 °C maximum case hot spot temperature
- Lifetime: 50,000 hours min. at 70 °C case temperature
- UL Class P
- Worldwide safety approvals
- Additional safety approvals when using the optional strain reliefs for models with "-T" suffix

VZM SERIES 60 W – 90 W

Efficient, Compact, Constant Voltage, Class 2
LED Drivers with 0–10 V Dimming

Nominal Input Voltage	Max. Output Power	Nominal Output Voltage	Max. Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range	Startup Time
120 & 277 Vac	90 W	24, 48 Vdc	3.75, 1.9 A	up to 90% typical	90 °C (measured at the hot spot)	< 20%	> 0.9	Programmable 0–10 V	1–100%	300 ms typical

Typical Application Diagram



ERP Part Number	Nominal Input Voltage (Vac)	Pout Max (W)	Vout Nom (Vdc)	Iout Max (A)
VZM60W				
VZM060W-24	120 & 277	60.0	24	2.5
VZM060W-48	120 & 277	60.0	48	1.25
VZM100W				
VZM100W-24	120 & 277	90.0	24	3.75
VZM100W-48	120 & 277	90.0	48	1.87



Models with Flying Leads, Aluminum Case

VZM100
L 150.2 x W 38.8 x H 24.9 mm
(L 5.91 x W 1.53 x H 0.98 in.)

VZM060
L 148.7 x W 31.8 x H 22.4 mm
(L 5.85 x W 1.25 x H 0.88 in.)



Features

- Class 2 power supply
- UL Class P
- Ripple $\leq 5\%$ @ 20% & 100% load
- Constant voltage mode with over-current protection
- IP20-rated case with silicone-based potting
- 90 °C maximum case hot spot temperature
- Lifetime: 5 years minimum at 70 °C case temperature
- EMI: Compliant with FCC CFR Title 47 Part 15 Class B at 120 Vac & Class A at 277 Vac
- Surge protection:
 - IEC61000-4-5: 2 kV line to line / 2 kV line to earth
 - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

NFC Programming

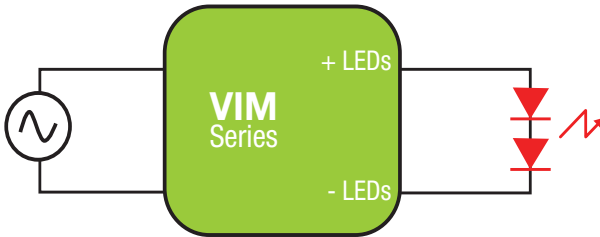
- Programmable output voltage for optimal dimming range
- Fully programmable 0–10 V dimming profile with dim-to-off

VIM SERIES 60 W – 90 W

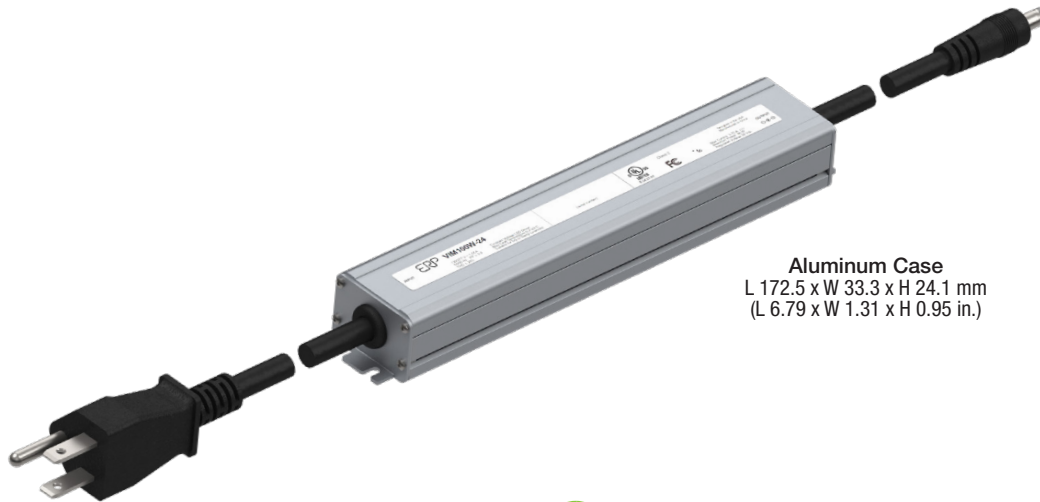
Efficient, Class 2
Constant Voltage LED Drivers

Nominal Input Voltage	Max. Output Power	Nominal Output Voltage	Max. Output Current	Efficiency	Max. Case Temperature	THD	Power Factor
120 & 277 Vac	90 W	12, 24 Vdc	5, 3.75 A	up to 90% 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)
VIM60W				
VIM060W-12	120 & 277	60.0	12	5
VIM100W				
VIM100W-24	120 & 277	90.0	24	3.75



Aluminum Case
L 172.5 x W 33.3 x H 24.1 mm
(L 6.79 x W 1.31 x H 0.95 in.)



Features

- Class 2 power supply
- IP66-rated case with silicone-based potting
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- Lifetime: 50,000 hours min.
- Worldwide safety approvals

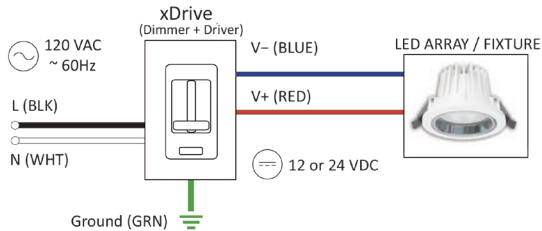
Typical Applications

- Signage
- Strip lights



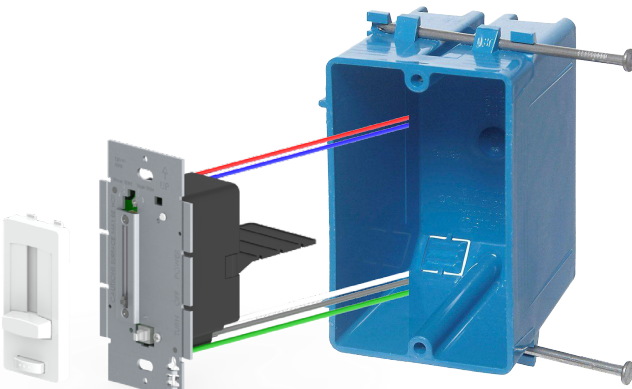
Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current Max	Efficiency	Max. Ambient Temperature	THD	Power Factor	Dimming Range	Startup Time
120 Vac	100 W	12, 24 V Constant Voltage	4.2 A	up to 91% typical	40 °C	< 20%	> 0.9	1–100% of light output	500 ms typical

Typical Application Diagram



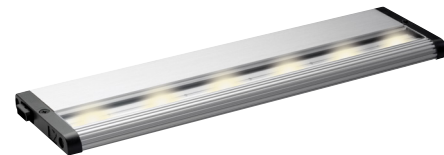
100 W: Metal Case & Metal Wall Plate
40 W & 60 W: Plastic Case & Metal Wall Plate

ERP Part Number	Nominal AC Line Voltage (Vac)	Pout Max (W)	Pout Min (W)	Vout Nom (V)	Iout Max (A)	Vout Regulation (Vdc)	Vout ripple (p-p)
VSW40U							
VSW40U-12-ERP	120	40.0	8.0	12	3.3	11.1 - 12.9 (+/-0.9 V)	< 10%
VSW60U							
VSW60U-12-ERP	120	60.0	10.0	12	5	11.1 - 12.9 (+/-0.9 V)	< 10%
VSW60U-24-ERP	120	60.0	3.0	24	2.5	22.2 - 25.8 (+/-1.8 V)	< 10%
VSW100U							
VSW100U-24-ERP	120	100.0	5.0	24	4.2	22.2 - 25.8 (+/-1.8 V)	< 10%



Typical Applications

- Track lights
- Downlights
- Tape/Strip lights
- Under-cabinet lights



Features

- LED Driver + Dimmer in one physical unit
- Simplifies LED installation by eliminating compatibility issues between driver and dimmer
- Fits in a standard recessed electrical box (gang box)
- 100% - 1% smooth dimming
- Single pole preset dimmer with on/off push switch
- Adjustable voltage output dial to address voltage drop
- Includes voltage barrier partition to install high and low voltage circuit in same gang box
- No derating required when ganging units
- Power failure memory: If power is interrupted, xDrive will return to the setting prior to interruption.
- The Glossy White color is the default color for the face plate and the trim plate. Other colors (Glossy Light Almond, Glossy Dark Brown, and Glossy Black) are available but sold separately



White & Tunable White

LED Light Engines

This Changes Everything.

White & Tunable White LED Light Engines
Featuring Embedded ERP Drivers.



bianco light engines do it all.

This is bianco™

In a word, bianco changes everything. ERP's global leadership in high-density driver circuit packaging enables a true lighting breakthrough—embedding the AC–DC driver inside the light engine and delivering the highest quality of light. Importantly, bianco offers across-the-board cost reduction from the cost, size, and manufacturing complexity of legacy external drivers to inventory SKU reduction—aligning performance, control and cost to every requirement.

BIANCO LED LIGHT ENGINES: WHITE / TUNABLE WHITE / TUNABLE WHITE WITH WARM DIM

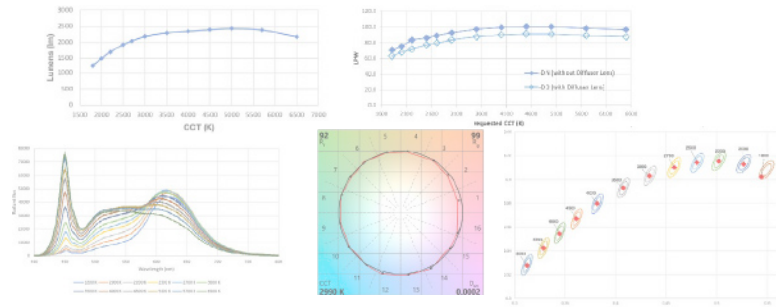


consider the incredible versatility.

The bianco line-up includes:

- White / Tunable White / Tunable White with Warm Dim Light Engines
- 50 and 65 mm case diameters with front-mount heatsink
- 9, 12, 19, 24 and 32 mm light-emitting surfaces
- 780–5000 lumen packages
- Tri Mode Dimming™ standard (TRIAC / 0-10V / ELV)
- Dim to off
- 0–10 V Tuning
- Bluetooth Field Commissioning Option (with free ERP app)
- Programmable CCT / Tuning Range / Peak Lumens
- Optical options: High-efficiency diffuser, TIR and reflector holders

bianco improves
quality of light.



performance **and** cost savings.

Past industry efforts to embed the AC-DC driver have failed to deliver quality light output. ERP has changed all this, in dramatic fashion, with integrated drivers and lighting technologies that deliver exceptional, reliable quality at reduced cost.

- Integrated Driver (120–277 VAC)
- CRI: 90+
- Color Consistency: three step (typically, two-step McAdam Ellipse)
- No Flicker (IEEE 1789-2015 compliant)
- Energy Star Compliant

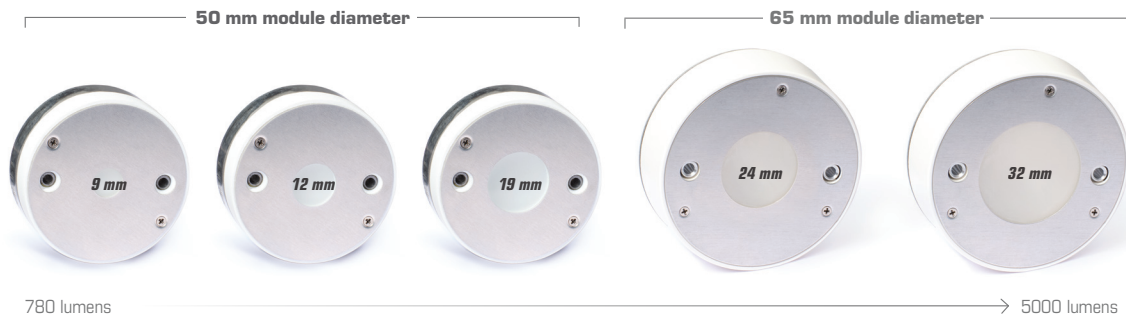
bianco slashes
costs everywhere.



superior illumination **and**
dramatic cost reduction.

Along with delivering quality of light, bianco delivers exponential cost savings!

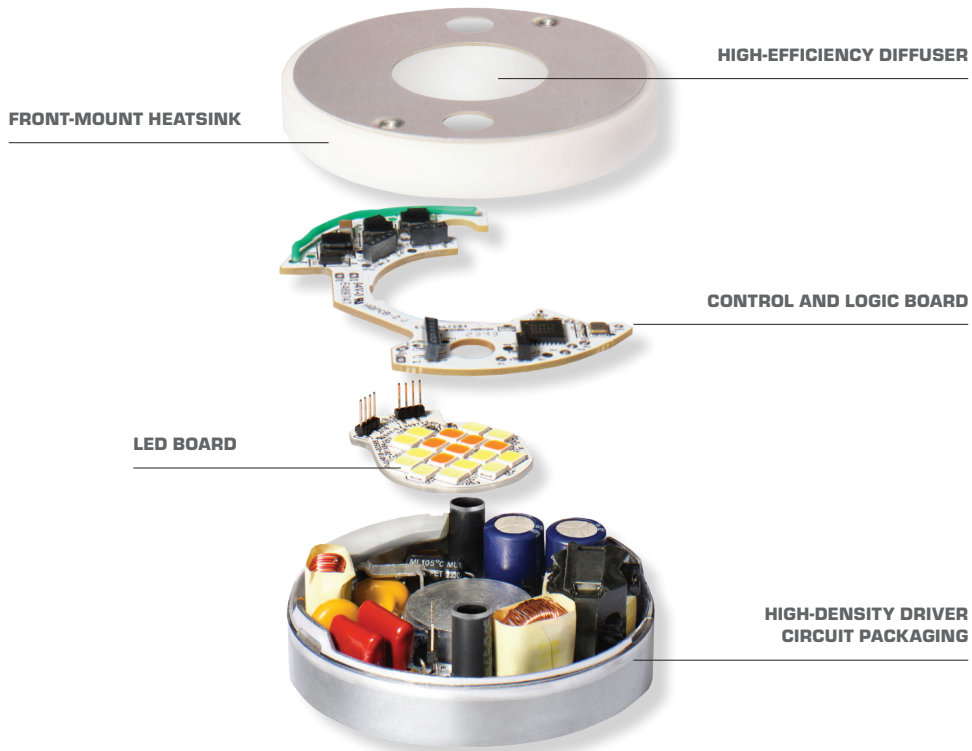
- Eliminate external driver cost and reduce the size, cost, labor requirements and complexity of fixtures
- UL Approved 90 °C thermal cutout eliminated—it's integral to the light engine
- Reduce fixture size
- Reduce fixture labor
- Easy module replacement in the field
- Programmability reduces SKUs



get in line.

The technology-rich light engine can be preconfigured on the assembly line to operate at a pre-defined color temperature, or dim-to-warm—with options to mimic halogen or incandescent. Consider the versatility—five light-emitting surfaces, three feature packages, programmable CCT range, warm dim profiles, two-channel and three-channel tuning.

a powerful little puck.



find the right light.

bianco offers a full line of technology rich LED light engines in 50 mm case diameter (Zhaga compliant) and 65 mm case diameter. The 50 mm diameter engine offers 9, 12 and 19 mm light emitting surfaces while the 65 mm offers 24 mm and 32mm. Source lumens run from 780 lm to 5000 lm. Coupled with three control options, bianco offers a robust line-up for all your lighting requirements.

bianco¹

ERP DRIVER INSIDE

Single White Module
CCT: 2700, 3000, 3500, 4000, 5000 K
Output: 1300-4000 lm
Tri-Mode Dimming(TM)

bianco²

ERP DRIVER INSIDE

Tunable White
Range: 2700-5000 K
Output: 780-4000 lm
Tri Mode Dimming
Options:
0-10 V Tuning
Bluetooth commissioning

bianco³

ERP DRIVER INSIDE

Tunable White with Selectable
Warm Dim
Range: 1800-6500 K
Output: 1200- 5000 lm
Tri Mode Dimming
Control Options:
0-10 V Tuning
Bluetooth commissioning

bianco¹

SINGLE WHITE

bianco²

TUNABLE WHITE

bianco³

TUNABLE WHITE / WARM DIM

Modes of Operation	Single White	Tunable White	Tunable White / Warm Dim
ERP Driver Inside	Yes	Yes	Yes
CCT/Tunable Range (K)	2700, 3000, 3500, 4000	2700-5000	1800-6500
Warm Dim	-	-	Halogen or Incandescent
Tri-Mode Dimming	Yes	Yes	Yes
0-10 V Tuning	-	Yes	Yes
Optional Bluetooth	-	Yes	Yes
LES (mm)	9, 12, 19, 24, 32	9, 12, 19, 24, 32	9, 12, 19, 24, 32
Peak Lumens (lm)	1,200-4000	780-4000	1200-5000
CRI	90+	90+	90+
Color consistency	3 step (typical 2 step)	3 step (typical 2 step)	3 step (typical 2 step)
Lumen Maintenance	L70	L70	L70
Flicker	IEE1789 -2015 Compliant	IEE1789 -2015 Compliant	IEE1789 -2015 Compliant



P  W E R + L  H T™

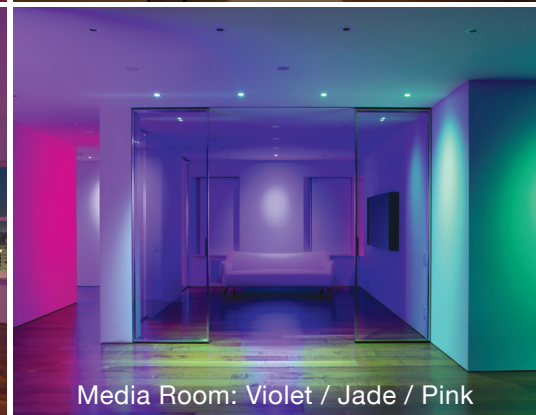
Tunable Color

LED Light Engines

araya[®] TUNABLE COLOR

COLOR IS HOW YOU LIGHT IT[®]

Araya recreates and controls light that emulates the spectral quality of daylight, and Araya accesses a rich gamut of pastels and saturated colors to unveil new design frontiers.



Private Residence in San Francisco. Fixtures by LF Illumination. DMX controls by Lutron[®]. Architect: Wesley Wei. Lighting Designer: Eve Quellman.

AWM1

AC INPUT TUNABLE COLOR LED LIGHT ENGINES



AWM1 (12 mm LES)



AWM1 (19 mm LES)

AWM1 Tunable Color Light Engines with AC Input: Redefining lighting possibilities with direct AC line voltage connectivity. This innovative light engine ushers in a new era of dynamic illumination with radical simplicity. Offering tunable CCT from 1800 K to 6500 K, individual RGBW control, and a dimming range from 100% down to 1%—while maintaining high-quality color rendering (90+ CRI)—AWM1 ensures a tailored lighting experience with the ability to create captivating lighting scenes through RGBW customization.

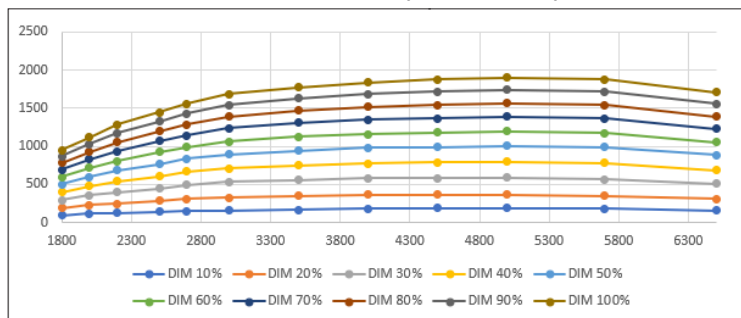
Compatible with traditional TRIAC and ELV dimming and featuring on-board DMX512-A-RDM, this light engine has the capability to upgrade firmware over the wire via RDM.

ELECTRICAL SPECIFICATIONS AND PHOTOMETRIC INFORMATION

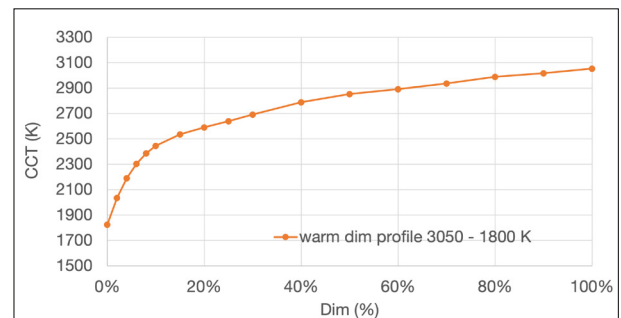
Nominal Input	120 VAC / 60 Hz
Control Options	TRIAC, ELV DMX512-A-RDM (with over-the-wire FW upgrade capability) BLE (for commissioning only)
CRI (Ra / R9)	> 90* / > 70*
Dimming Range	100% to 1%, at constant CCT
Nominal Color Consistency	Norm. < 2 Step MacAdam ellipse
CCT Range	1800–6500 K*
Case Diameter	50 mm (1.97 in.)
Case Height	17.5 mm (0.69 in.)
Light Emitting Surface (LES) Diameter	12 mm, 19 mm
Light Output	1400 lm, 1800 lm

*Minimum CCT (for including S-red) to be determined.

LUMENS VS. CCT (REQUESTED)



WARM DIM SWEEP

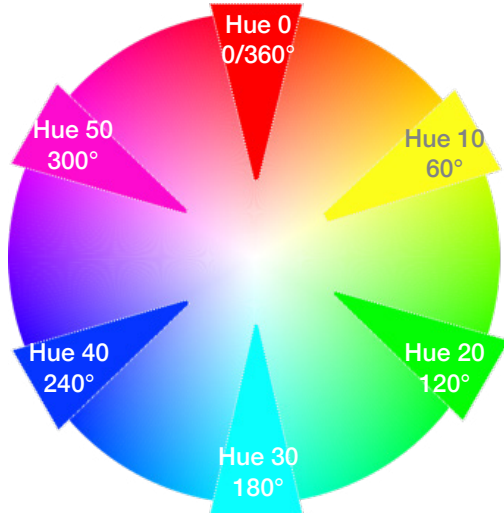


DRIVING QUALITY OF LIGHT

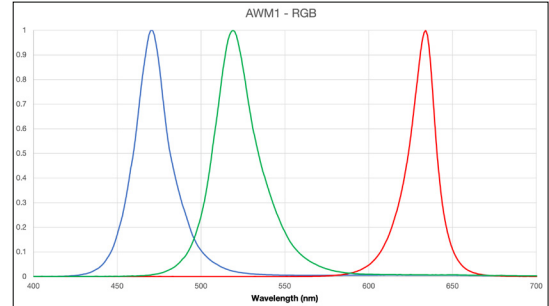
THE AWM1 DATA TELLS THE STORY

RGB DATA

RGB COLOR WHEEL & CORRESPONDING HUE DEGREES



SPD AND DOMINANT WAVELENGTHS OF EACH RGB CHANNEL



	L_dominant (nm)	Excitation Purity (%)*
RED	622.5	99.5
GRN	525.4	80.6
BLU	473.3	92.4

*Achromatic Stimulus Point (0.3333, 0.3333) was used as reference.

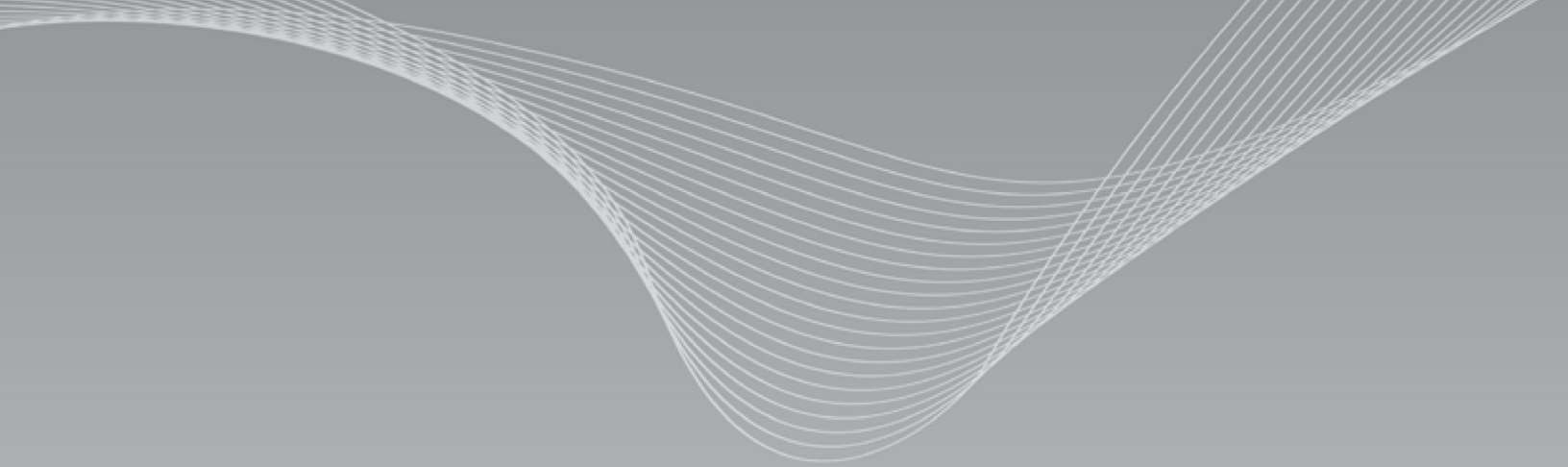
OPERATIONAL SPECIFICATIONS

CONTROL SYSTEM / PROTOCOL	DIMMING	CCT	WARM DIM	RGBW
TRIAC / ELV	100-1%	-	YES	-
DMX512-A-RDM	100-1%	TUNABLE 1800-6500 K	3050-1800 K (HALOGEN)	YES

RDM PERSONALITIES		DMX ADDRESS (FACTORY DEFAULT START ADDRESS = 1)									
Suffix*	Description	1	2	3	4	5	6	7	8		
8-BIT MODE	Default (None)	Color Tuning 4CH (HSI)	DIM 0-100%	CCT 1700-8000 K	SAT 0-100	HUE 0-60	-	-	-	-	
	P03	RGBK	RED 0-100%	GREEN 0-100%	BLUE 0-100%	CCT 1700-8000 K	-	-	-	-	
	P06	RGBW-2700				2700 K (0-100%)	-	-	-	-	-
	P08	RGBW-4300				4300 K (0-100%)	-	-	-	-	-
	P11	RGBW-6500				6500 K (0-100%)	-	-	-	-	-
	P13	RGBW-3500				3500 K (0-100%)	-	-	-	-	-
P15	RGBW-3000	3000 K (0-100%)				-	-	-	-	-	
16-BIT MODE	P02	Warm Dim "DDM"	DIM 0-100%	fdim	-	-	-	-	-	-	
	P05	Color Tuning 4CH (HSI)	DIM 0-100%	fdim	CCT 1700-8000 K	fcct	SAT 0-100	fsat	HUE 0-60	fhue	
	P10	Color Tuning 4CH (HSI)	DIM (Square Dimming) 0-100%	fdim	CCT 1700-8000 K	fcct	SAT 0-100	fsat	HUE 0-60	fhue	
	P04	RGBK	RED 0-100%	fred	GREEN 0-100%	fgreen	BLUE 0-100%	fblue	CCT 1700-8000 K	fcct	
	P07	RGBW-2700							2700 K (0-100%)	f2700	
	P09	RGBW-4300							4300 K (0-100%)	f4300	
	P12	RGBW-6500							6500 K (0-100%)	f6500	
	P14	RGBW-3500							3500 K (0-100%)	f3500	
P16	RGBW-3000	3000 K (0-100%)							f3000		

Download the separate Araya DMX512-A Lookup Tables on the ERP website, for specific programming values and information.

All information is preliminary. Specifications may be subject to change without notice. Questions? Please contact support@erp-power.com.



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