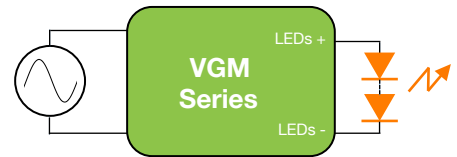
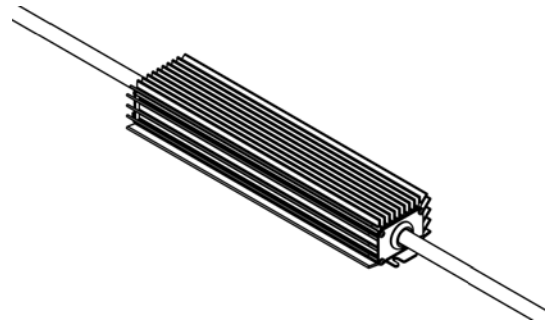


100 & 60 W, Efficient, CV Class 2 LED Drivers for Signage Applications

Nominal Input Voltage	Max. Output Power	Nominal Output Voltage	Max. Output Current	Efficiency	Max. Case Temperature	THD	Power Factor
120/277 Vac	94 W	12, 24, Vdc	5, 3.92 A	up to 90% typical	100°C (measured at the hot spot)	< 20%	> 0.9



Aluminum Case
 L 172 x W 43.9 x H 27.1 mm
 (L 6.77 x W 1.73 x H 1.07 in)



Typical Application Diagram

ORDERING INFORMATION

ERP Part Number	Nominal Input Voltage (Vac)	Pout Max (W)	Vout Nom (Vdc)	Iout Min (A)	Iout Max (A)	Open Loop Voltage (No Load Vout Max) (Vdc)
VGM060W-12	120/277	60	12	0.1	5	12.84
VGM100W-24	120/277	94	24	0.2	3.92	25.68

FEATURES

- Class 2 power supply
- IP66-rated case with silicone-based potting
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) CA Title 24 and CA Title 24 technical requirements
- Lifetime: 50,000 hours min at 60°C ambient temperature
- UL879 SAM (Sign Component Manual) listing
- Worldwide safety approvals




TYPICAL APPLICATIONS

- Signage
- Strip lights



100 & 60 W, Efficient, CV Class 2 LED Drivers for Signage Applications

1 - INPUT SPECIFICATION (@25°C ambient temperature)

	Units	Minimum	Typical	Maximum	Notes
Input Voltage Range (Vin)	Vac	90	120, 277	305	•The rated output voltage for each model is achieved at Vin≥105 Vac & at Vin≥249 Vac •At maximum load
Input Frequency Range	Hz	47	50/60	63	
Input Current (Iin)	A			1.05 A @ 120 Vac 0.48 A @ 277 Vac	
Power Factor (PF)		0.9	> 0.9		•At nominal input voltage •From 100% to 60% of rated power
Inrush Current	A	Meets NEMA-410 requirements			•At any point on the sine wave and 25°C
Leakage Current	μA			400 μA @ 120 Vac 920 μA @ 277 Vac	Measured per IEC60950-1
Input Harmonics	Complies with IEC61000-3-2 for Class C equipment				
Total Harmonics Distortion (THD)				20%	•At nominal input voltage •From 100% to 60% of rated power •Complies with DLC (Design Light Consortium) technical requirements
Efficiency	%	-	up to 90%	-	Measured with nominal input voltage
Isolation	The AC input to the main DC output is isolated and meets Class II reinforced/double insulation power supply 				

2 - MAIN OUTPUT SPECIFICATION (@25°C ambient temperature)

	Units	Minimum	Typical	Maximum	Notes
Output Voltage (Vout)	Vdc		12, 24		See ordering information for details
Output Current (Iout)	A			12 Vdc: 5.0 A 24 Vdc: 3.92 A	The rated output voltage for each model is achieved at Vin≥105 Vac & at Vin≥249 Vac.
Output Voltage Regulation	%	-5		5	•At nominal AC line voltage •Includes load and current set point variations.
Output Voltage Overshoot	%	-	-	10	The driver does not operate outside of the regulation requirements for more than 500 ms during power on with maximum load.
Ripple Voltage	≤ 5% of rated output voltage for each model				•Measured at maximum load and nominal input voltage •Calculated in accordance with the IES Lighting Handbook, 9th edition
Start-up Time	ms			500	•Measured from application of AC line voltage to 100% light output •Measured at nominal AC input voltage and with maximum loading •Complies with ENERGY STAR® luminaire specification.

100 & 60 W, Efficient, CV Class 2 LED Drivers for Signage Applications

3 - ENVIRONMENTAL CONDITIONS

	Units	Minimum	Typical	Maximum	Notes
Operating Ambient Temperature (Ta)	°C	-40		+60	
Maximum Case Temperature (Tc)	°C			+100	Case temperature measured at the hot spot •tc (see label in page 9)
Storage Temperature	°C	-40		+85	
Humidity	%	5	-	95	Non-condensing
Cooling	Convection cooled				
Acoustic Noise	dBA			24	Measured at a distance of 1 meter
Mechanical Shock Protection	per EN60068-2-27				
Vibration Protection	per EN60068-2-6 & EN60068-2-64				
MTBF	> 200,000 hours when operated at nominal input and output conditions, and at Ta ≤ 60°C				
Lifetime	50,000 hours at Ta ≤ 60°C ambient temperature and at a 50% duty cycle (this assumes the VGM driver is turned on for 12 hours per day)				

4 - EMC COMPLIANCE AND SAFETY APPROVALS

EMC Compliance					
Conducted and Radiated EMI		FCC CFR Title 47 Part 15 Class B at 120 Vac and Class A at 277 Vac			
Harmonic Current Emissions		IEC61000-3-2	For Class C equipment		
Voltage Fluctuations & Flicker		IEC61000-3-3			
Immunity Compliance	ESD (Electrostatic Discharge)	IEC61000-4-2	6 kV contact discharge, 8 kV air discharge, level 3		
	RF Electromagnetic Field Susceptibility	IEC61000-4-3	3 V/m, 80 - 1000 MHz, 80% modulated at a distance of 3 meters		
	Electrical Fast Transient	IEC61000-4-4	± 2 kV on AC power port for 1 minute, ±1 kV on signal/control lines		
	Surge	IEC61000-4-5	•± 6 kV line to line (differential mode) /± 6 kV line to common mode ground (tested to secondary ground) on AC power port, ±0.5 kV for outdoor cables		
		ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A, 2.5 kV ring wave			
	Conducted RF Disturbances	IEC61000-4-6	3V, 0.15-80 MHz, 80% modulated		
Voltage Dips		IEC61000-4-11	>95% dip, 0.5 period; 30% dip, 25 periods; 95% reduction, 250 periods		
Safety Agency Approvals					
UL	UL8750 listed Class 2, UL879 SAM (Sign Component Manual) listing				
cUL	CAN/CSA C22.2 No. 250.13-14 LED equipment for lighting applications				
Safety					
	Units	Minimum	Typical	Maximum	Notes
Hi Pot (High Potential) or Dielectric voltage-withstand	Vdc	2500			• Insulation between the input (AC line and Neutral) and the output • Tested at the RMS voltage equivalent of 1767 Vac



VGM Series

VGM060W-12 60 W
VGM100W-24 94 W

100 & 60 W, Efficient, CV Class 2 LED Drivers for Signage Applications

■ 5 - PROTECTION FEATURES

Under-Voltage (Brownout)

The VGM series provides protection circuitry such that an application of an input voltage below the minimum stated in section 1 (Input Specification) shall not cause damage to the driver.

Internal Over temperature Protection

The VGM is equipped with an internal temperature sensor on the primary power train. Failure to stay within the convection power rating will cause the driver to shut down. The main output current will be resumed when the temperature of the built-in temperature sensor cools adequately.

Output Open Load

A no load condition will not damage the VGM or cause a hazardous condition. The driver will remain stable and operate normally after application of a load. When the LED load is removed, the output voltage of the VGM series is limited to 7% about the output voltage of each model.

Over Power Protection

The VGM will shut down and auto recover in an over power condition. This condition will cause no damage to the power supply.

Input Over Current Protection

The VGM series incorporates a primary AC line fuse for input over current protection.

Short Circuit and Over Current Protection

The VGM series is protected against short-circuit such that a short from any output to return shall not result in a fire hazard or shock hazard. The driver shall hiccup as a result of a short circuit or over current fault. Removal of the fault will return the driver to within normal operation. The driver shall recover, with no damage, from a short across the output for an indefinite period of time.

100 & 60 W, Efficient, CV Class 2 LED Drivers for Signage Applications

7 - PREDICTED LIFETIME VERSUS CASE AND AMBIENT TEMPERATURE

Lifetime is defined by the measurement of the temperatures of all the electrolytic capacitors whose failure would affect light output under the nominal LED load and worst case AC line voltage. The graph in figure 1 are determined by the electrolytic capacitor with the shortest lifetime, among all electrolytic capacitors. It represents a worst case scenario in which the LED driver is powered 12 hours/day, 7 days/week. The lifetime of an electrolytic capacitor is measured when any of the following changes in performance are observed:

- 1) Capacitance changes more than 20% of initial value
- 2) Dissipation Factor ($\tan \delta$): 150% or less of initial specified value
- 3) Equivalent Series Resistance (ESR): 150% or less of initial specified value
- 4) Leakage current: less of initial specified value

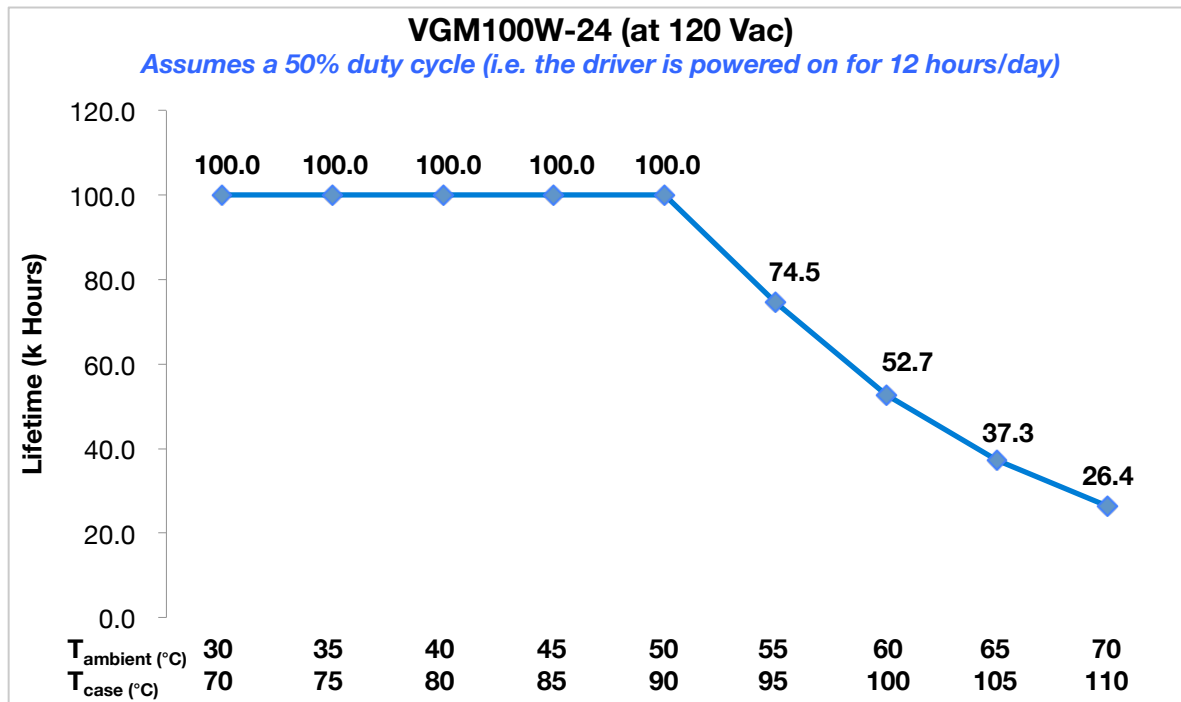


Figure 1

Notes:

- The ambient temperature T_{ambient} and the differential between T_{ambient} and T_{case} mentioned in the above graphs are relevant only as long as both the driver and the light fixture are exposed to the same ambient room temperature. If the LED driver is housed in an enclosure or covered by insulation material, then the ambient room temperature is no longer valid. In this situation, please refer only to the case temperature T_{case} .
- It should be noted the graph "Lifetime vs. Ambient Temperature" may have an error induced in the final application if the mounting has restricted convection flow around the case. For applications where this is evident, the actual case temperature measured at the T_c point in the application should be used for reliability calculations.

100 & 60 W, Efficient, CV Class 2 LED Drivers for Signage Applications

8 – EFFICIENCY VERSUS LOAD

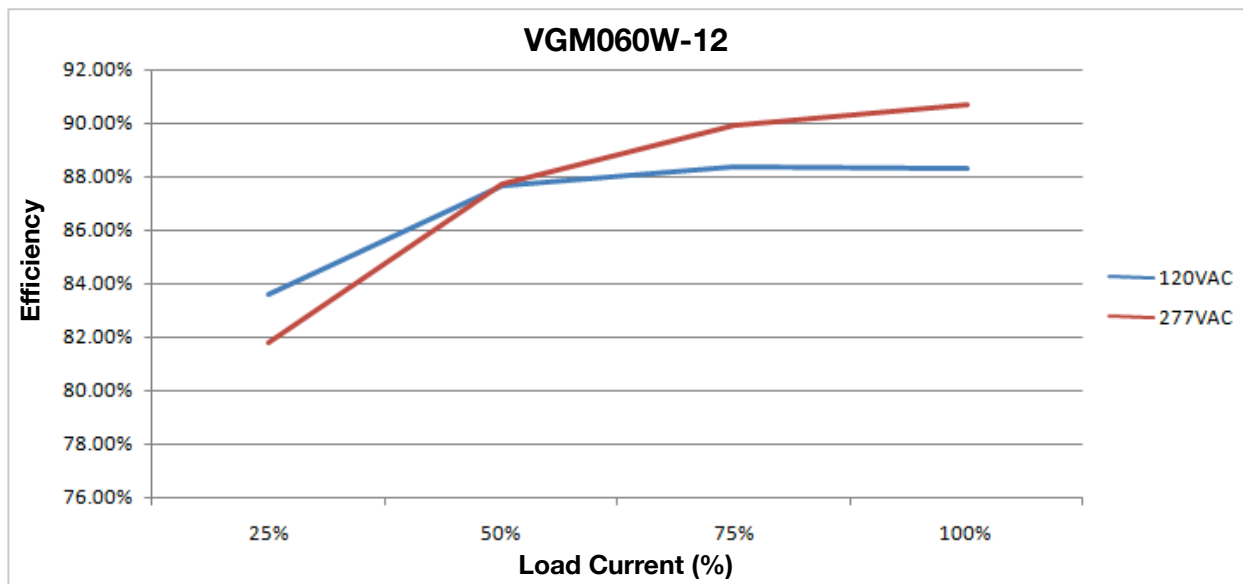


Figure 2

9 – POWER FACTOR VERSUS LOAD

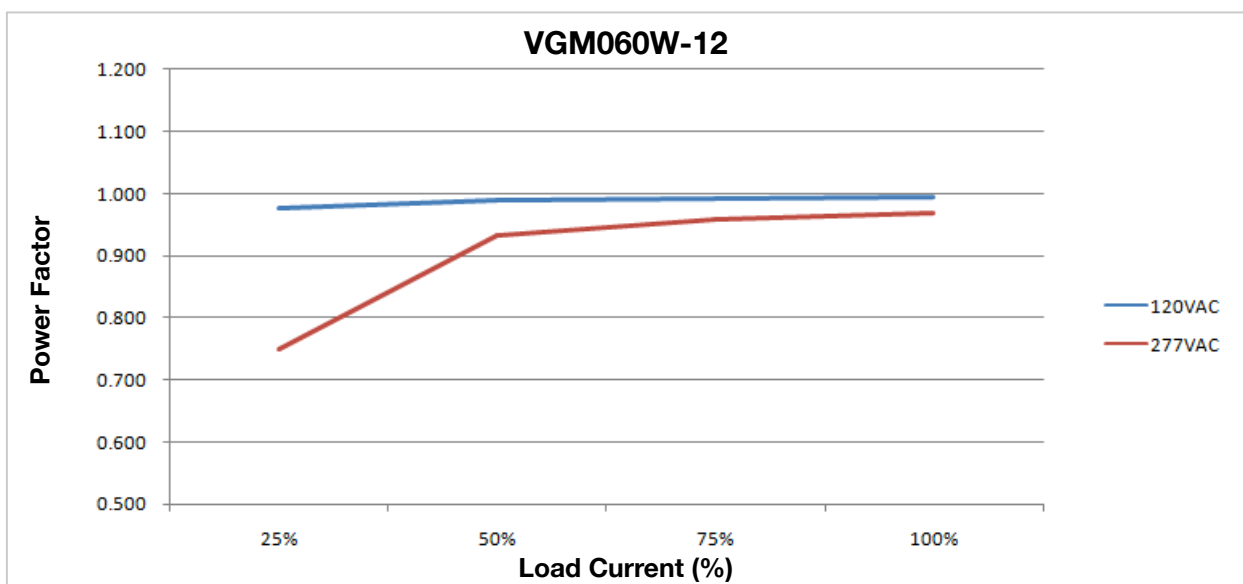


Figure 3

100 & 60 W, Efficient, CV Class 2 LED Drivers for Signage Applications

10 – THD VERSUS LOAD

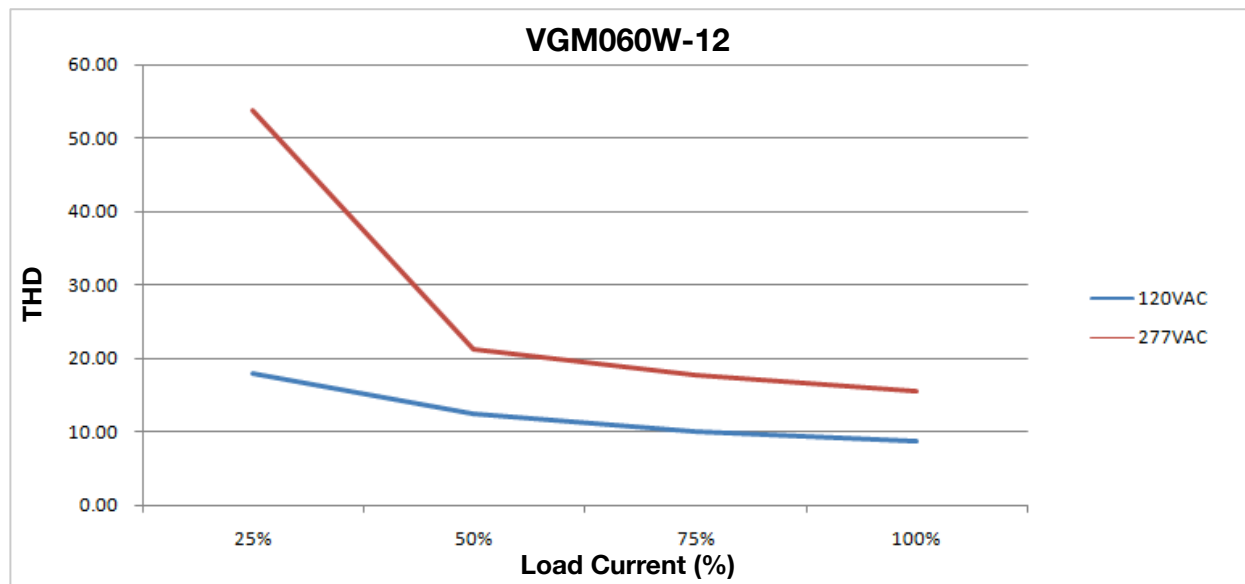


Figure 4

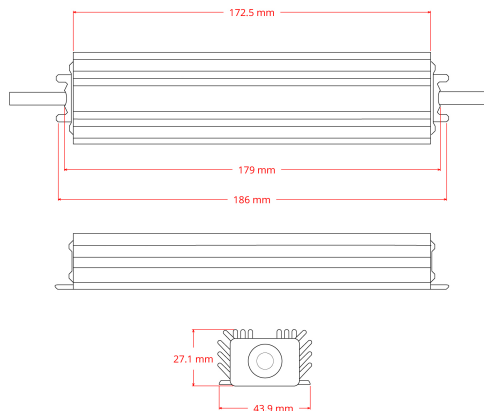
100 & 60 W, Efficient, CV Class 2 LED Drivers for Signage Applications

11 - MECHANICAL DETAILS

Packaging Options: Aluminum case
I/O Connections: Jacketed wires, 203mm (8 in) long, NEMA 5-15 plug
All the wires, on both input and output, have a 300 V insulation rating.
Ingress Protection: IP66 rated
Mounting Instructions: The VGM driver case must be secured on a flat surface.

12 - OUTLINE DRAWINGS

Dimensions: L 172 x W 43.9 x H 27.1 mm (L 6.77 x W 1.73 x H 1.07 in)
Volume:
Weight:



All dimensions are in mm
Figure 5



VGM Series

VGM060W-12 60 W
VGM100W-24 94 W

100 & 60 W, Efficient, CV Class 2 LED Drivers for Signage Applications

USA Headquarters

Tel: +1-805-517-1300
Fax: +1-805-517-1411
893 Patriot Drive, Suite E,
Moorpark, CA 93021, USA

CHINA Operations

Tel: +86-756-6266298
Fax: +86-756-6266299
No. 8 Pingdong Road 2
Zhuhai, Guangdong, China 519060

ERP Power, LLC (ERP) reserves the right to make changes without further notice to any products herein. ERP makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does ERP assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in ERP data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. ERP does not convey any license under its patent rights nor the rights of others. ERP products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the ERP product could create a situation where personal injury or death may occur. Should Buyer purchase or use ERP products for any such unintended or unauthorized application, Buyer shall indemnify and hold ERP and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that ERP was negligent regarding the design or manufacture of the part. ERP is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.