EMERAL TECH

Technical Specification

ELED-0700120-S

120W Multiple Output LED Driver Module

PRODUCTION DATASHEET

ELED-0700120-S

Description

ELED-0700120-S is a fully enclosed compact solid-state LED lighting driver module. It operates from a universal AC input supply in the range of 90VAC to 305VAC, 50/60Hz to drive a string of LEDs with active power factor correction. These units will provide 6 x 350mA of output current and a maxmum output voltage of 18~58V for 120W maximum output power. They are designed to be highly efficient and highly reliable. The standard features include lighting protection, over voltage protections, short circuit protection, and over temperature protection.

Control terminal leads include a dimming input BRITE A with a dedicated RETURN lead. The amplitude of the output LED string current will vary from 10% to 100% corresponding to a 1VDC to 10VDC signal on the BRITE A input following the 0V to 10V ESTA E1.3-2001 Analog

To reduce audible noise the internal switching frequency remains above 30kHz. Safety features include open output circuit protection, whole string short circuit protection. The maximum allowable hot spot case temperature is 90°C (above this temperature the module will be thermally self protected). The recommended operating ambient temperature range is -30°C to 70°C, as long as the maximum case temperature is not exceeded. The compact enclosure is rated to IP66, meets UL8750 and UL1310 class 2.

(Approval Pending)

Features

- Ultra High Efficiency (Up to 92%)
- Active Power Factor Correction (0.99 Typical)
- Constant Current Output
- Lightning Protection
- All-Round Protection: SCP, OTP, OVP
- Waterproof (IP67)
- Comply With UL8750 & EN61347 Safety Regulations

Applications

- Residential and Commercial LED
- Lighting Fixtures such as:
- LED Down Lights
- LED Street Ligh

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ELED Series

120W LED Driver Module

EMERALTECH

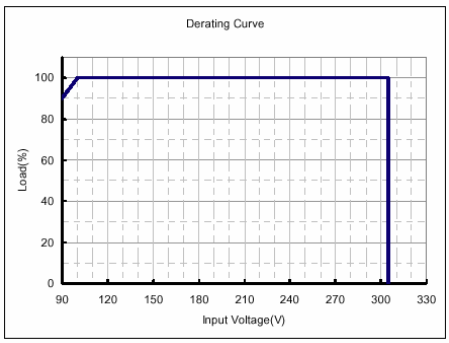
ELED-0700120-S

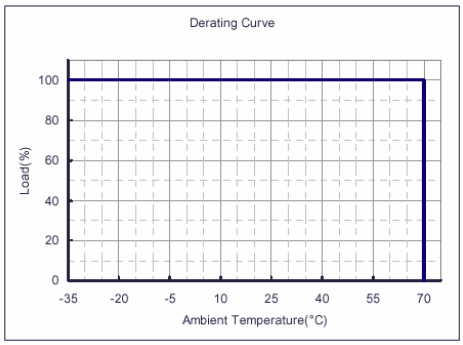
Key Features

- High Voltage AC Input: 90VAC to 305VAC
- High Efficiency
- Active Power Factor Correction
- Constant Current 700mA
- Anode Supply Adjusts for String Voltage between 40V and 57V
- Suitable for Damp Locations (IP66)
- UL8750 & UL1310
- UL File E337545
- FCC Class B
- Long Life Expectancy
- RoHS Compliant
- Full Protection: OVP, SCP, OTP, Maximum Power Limit
- Unique Fault Detection and Managemen•

MTBF of 1,700,000 hours @ 50°C (Bellcore)

Derating Curve





Model Information

Output Current	Input Voltage	Max. Output Voltage	Max. Output Power	Typical Efficiency (1)	Power Factor		Model Number
					110Vac	220Vac	
350 mA	90 ~ 305 Vac	343 Vdc	120 W	92.0%	0.98	0.96	ELED-0700120S035T
450 mA	90 ~ 305 Vac	266 Vdc	120 W	92.0%	0.98	0.96	ELED-0700120S045T
700 mA	90 ~ 305 Vac	171Vdc	120 W	92.0%	0.98	0.96	ELED-0700120S070T
1050 mA	90 ~ 305 Vac	114 Vdc	120 W	91.0%	0.98	0.96	ELED-0700120S105T
1400 mA	90 ~ 305 Vac	86 Vdc	120 W	91.0%	0.98	0.96	ELED-0700120S140T
1750 mA	90 ~ 305 Vac	68 Vdc	120 W	91.0%	0.98	0.96	ELED-0700120S175T
2100 mA	90 ~ 305 Vac	57 Vdc	120 W	91.0%	0.98	0.96	ELED-0700120S210T
2450 mA	90 ~ 305 Vac	49 Vdc	120 W	91.0%	0.98	0.96	ELED-0700120S245T
2800 mA	90 ~ 305 Vac	43 Vdc	120 W	91.0%	0.98	0.96	ELED-0700120S280T

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120W LED Driver Module

ELED-0700120-S

3150 mA	90 ~ 305 Vac	38 Vdc	120 W	90.5%	0.98	0.96	ELED-0700120S315T
3500 mA	90 ~ 305 Vac	34 Vdc	120 W	90.5%	0.98	0.96	ELED-0700120S350T
4200 mA	90 ~ 305 Vac	28 Vdc	120 W	90.5%	0.98	0.96	ELED-0700120S420T
4900 mA	90 ~ 305 Vac	24 Vdc	120 W	90.5%	0.98	0.96	ELED-0700120S490T

Notes: (1) Measured at full load and 220 Vac input.
(2) A suffix –xxxx may be added to denote variations or modifications to the base product, where x can be any alphanumeric character or blank.

Input Specifications

Parameter	Min.	Typ.	Max.	Notes
Input Voltage	90 V	-	305 V	
Input Frequency	47 Hz	-	63 Hz	
Leakage Current	-	-	1 mA	At 277Vac 50/60Hz input
Input AC Current	-	-	1.5 A	Measured at full load and 100 Vac input.
	-	-	0.7 A	Measured at full load and 220 Vac input.
Inrush current	-	-	65 A	Measured at full load and 220 Vac input.

Output Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Range				
IO = 350 mA	332 mA	350 mA	368 mA	
IO = 450 mA	427 mA	450 mA	473 mA	
IO = 700 mA	665 mA	700 mA	735 mA	
IO = 1050 mA	997 mA	1050 mA	1102 mA	
IO = 1400 mA	1330 mA	1400 mA	1470 mA	
IO = 1750 mA	1662 mA	1750 mA	1837 mA	
IO = 2100 mA	1995 mA	2100 mA	2205 mA	
IO = 2450 mA	2327 mA	2450 mA	2572 mA	
IO = 2800 mA	2660 mA	2800 mA	2940 mA	
IO = 3150 mA	2992 mA	3150 mA	3307 mA	
IO = 3500 mA	3325 mA	3500 mA	3675 mA	
IO = 4200 mA	3990 mA	4200 mA	4410 mA	
IO = 4900 mA	4655 mA	4900 mA	5145 mA	

Output Voltage Range				
IO = 350 mA	**206 V**	**-**	**343 V**	
IO = 450 mA	**160 V**	**-**	**266 V**	
IO = 700 mA	**103 V**	**-**	**171 V**	
IO = 1050 mA	**68 V**	**-**	**114 V**	
IO = 1400 mA	**52 V**	**-**	**86 V**	
IO = 1750 mA	**41 V**	**-**	**68 V**	
IO = 2100 mA	**34 V**	**-**	**57 V**	
IO = 2450 mA	**29 V**	**-**	**49 V**	
IO = 2800 mA	**26 V**	**-**	**43 V**	
IO = 3150 mA	**23 V**	**-**	**38 V**	
IO = 3500 mA	**20 V**	**-**	**34 V**	
IO = 4200 mA	**17 V**	**-**	**28 V**	
IO = 4900 mA	**14 VA**	**-**	**24 V**	
Ripple and Noise (pk-pk)	**-**	**-**	**3% VO**	**Measured by 20 MHz bandwidth oscilloscope and the output paralleled a0.1 uF ceramic capacitor and a 10 uF electrolytic capacitor**
Line Regulation	**-**	**-**	**1%**	
Load Regulation	**-**	**-**	**5%**	
Turn-on Delay Time	**-**	**0.6 S**	**1.0 S**	**Measured at 110Vac input.**
	-	**0.6 S**	**1.0 S**	**Measured at 220Vac input.**

Note: All specifications are typical at 25 °C unless otherwise stated.

Protection Functions

Parameter	Min.	Typ.	Max.	Notes
Output Current Range				
IO = 350 mA	**411 V**	**446 V**	**480 V**	
IO = 450 mA	**319 V**	**346 V**	**373 V**	
IO = 700 mA	**205 V**	**222 V**	**240 V**	
IO = 1050 mA	**136 V**	**148 V**	**160 V**	
IO = 1400 mA	**103 V**	**112 V**	**121 V**	**Latch mode. The power supply shall return to normal operation only after the power is turn-on again.**
IO = 1750 mA	**81 V**	**88 V**	**96 V**	
IO = 2100 mA	**68 V**	**74 V**	**80 V**	
IO = 2450 mA	**58 V**	**64 V**	**69 V**	
IO = 2800 mA	**51 V**	**56 V**	**61 V**	
IO = 3150 mA	**45 V**	**49 V**	**54 V**	
IO = 3500 mA	**40 V**	**44 V**	**48 V**	
IO = 4200 mA	**33 V**	**36 V**	**40 V**	
IO = 4900 mA	**28 V**	**31 V**	**34 V**	

Over Temperature Protection	-	110 °C	-	Maximum temperature of components inside the case.
Short Circuit Protection	No damage shall occur when any output operating in a short circuit condition. Thepower supply shall be self-recovery when the fault condition is removed.			

General Specifications

Parameter	Min.	Typ.	Max.	Notes
Output Current Range				
IO = 350 mA	89.0%	90.0%	-	Measured at full load, 110Vac input, 25 ° C ambient temperature, after the unit is thermally stabilized. It will be lower about 1%, if measured immediately after startup.
IO = 450 mA	89.0%	90.0%	-	
IO = 700 mA	89.0%	90.0%	-	
IO = 1050 mA	88.0%	89.0%	-	
IO = 1400 mA	88.0%	89.0%	-	
IO = 1750 mA	88.0%	89.0%	-	
IO = 2100 mA	88.0%	89.0%	-	
IO = 2450 mA	88.0%	89.0%	-	
IO = 2800 mA	88.0%	89.0%	-	
IO = 3150 mA	87.5%	88.5%	-	
IO = 3500 mA	87.5%	88.5%	-	
IO = 4200 mA	87.5%	88.5%	-	
IO = 4900 mA	87.5%	88.5%	-	
Output Voltage Range				
IO = 350 mA	91.0%	92.0%	-	Measured at full load, 220Vac input, 25 ° C ambient temperature, after the unit is thermally stabilized. It will be lower about 1%, if measured immediately after startup.
IO = 450 mA	91.0%	92.0%	-	
IO = 700 mA	91.0%	92.0%	-	
IO = 1050 mA	90.0%	91.0%	-	
IO = 1400 mA	90.0%	91.0%	-	
IO = 1750 mA	90.0%	91.0%	-	
IO = 2100 mA	90.0%	91.0%	-	
IO = 2450 mA	90.0%	91.0%	-	
IO = 2800 mA	90.0%	91.0%	-	
IO = 3150 mA	89.5%	90.5%	-	
IO = 3500 mA	89.5%	90.5%	-	
IO = 4200 mA	89.5%	90.5%	-	
IO = 4900 mA	89.5%	90.5%	-	
MTBF	460,000 hours			For 1400 mA output model, measured at110Vac input, 80%Load and 25 °C ambient temperature (MIL-HDBK-217F).

Life Time	80,000 hours	For 1400 mA output model, measured at 220Vac input, 80%Load and 45 °C ambient temperature.
Dimensions		
Inches (L × W × H)	7.64 × 2.66 × 1.46	
Millimeters (L × W × H)	194 × 67.5 × 37	
Net Weight	1000 g	

Note: All specifications are typical at 25 °C unless otherwise stated.

Environmental Specifications

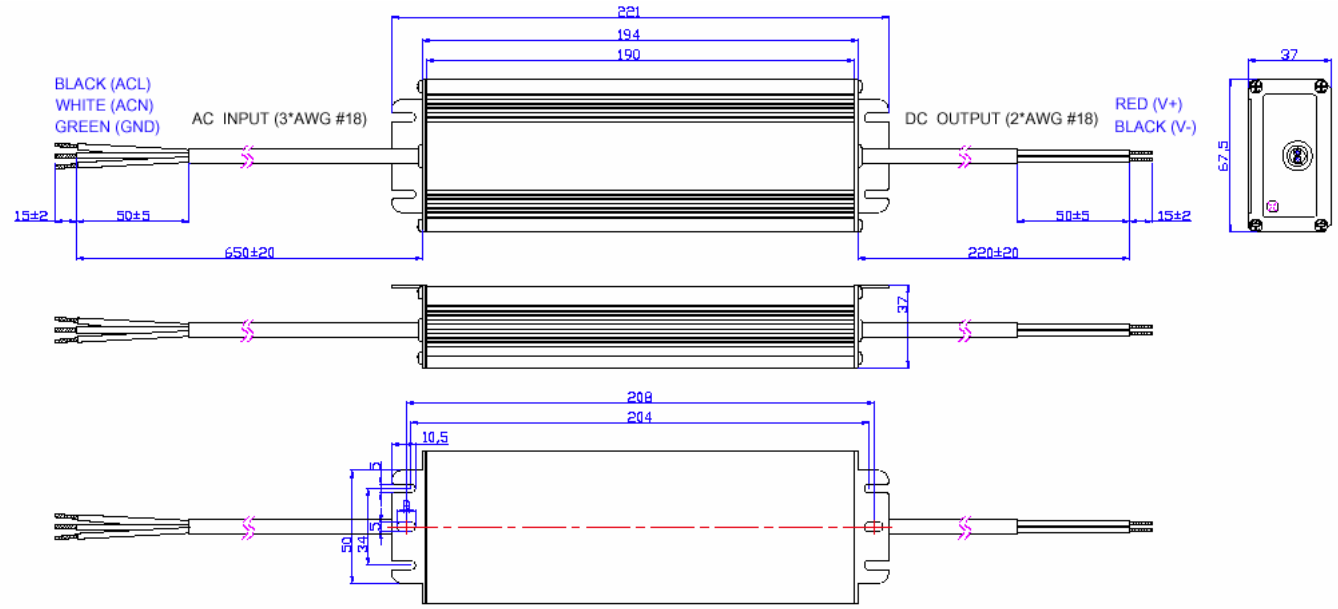
Parameter	Min.	Typ.	Max.	Notes
Operating Temperature	-35 °C		+70°C	Humidity: 10% RH to 100% RH
Storage Temperature	-40 °C		+80°C	Humidity: 5% RH to 100% RH

Safety & EMC Compliance

Safety Category	Country	Notes
CUL	USA & Canada	UL8750 Compliance to UL1012 UL935, CSA-C22.2 No. 0, CSA-C22.2 No. 107.1, CSA-C22.2 No.
CE	Europe	EN 61347-1, EN61347-2-13
EMI Standards		**Notes**
EN 55015		Conducted emission Test & Radiated emission Test with 6 dB margin
EMS Standards		**Notes**
EN 61000-3-2		Harmonic current emissions
EN 61000-3-3		Voltage fluctuations & flicker
EN 61000-4-2		Electrostatic Discharge (ESD): 8 kV air discharge, 4 kV contact discharge
EN 61000-4-3		Radio-Frequency Electromagnetic Field Susceptibility Test-RS
EN 61000-4-5		Electrical Fast Transient / Burst-EFT

EN 61000-4-6	Surge Immunity Test: AC Power Line: line to line 2 kV, line to earth 4 kV
EN 61000-4-8	Conducted Radio Frequency Disturbances Test-CS
EN 61000-4-11	Power Frequency Magnetic Field Test
EN 61547	Voltage Dips

Mechanical Outline



RoHS Compliance

Our products comply with the European Directive 2002/95/EC, calling for the elimination of lead and other hazardous substances from electronic products.

Revision History

Change Date	Rev.	Description of Change		
		Item	From	To
2012-01-02	A	Change MTBF and Life Time. Add the model of 350mA. 2010-05-31 E		
2012-02-02	B	Change Turn-on Delay Time		

2012-03-02	**C**	Delete “UL1310 Class2” in Safety & EMC Compliance		
2012-03-10	**D**	Change notes of efficiency.		
2012-03-10	**E**	Add star rank for recommended models		
		Add Leakage Current in Input Specifications		Max.1mA at 277Vac,50/60Hz input
		Standardize the tolerance in Mechanical Outline		

NOTES