EMERAL TECH

ELED-0700030-S

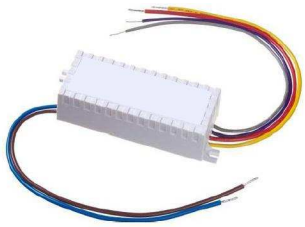
Technical Specification

ELED-0700030-S

30W 700mA Dimmable HV LED Driver Module

PRODUCTION DATASHEET

ELED-0700030-S



Description

ELED-0700030-S is a highly reliable 30W solid-state LED lighting driver module with a galvanic isolated output. It is compliant to Energy Star for commercial, industrial and residential applications. It is compatible with 50Hz and 60Hz AC power sources worldwide with standard voltages ranging from 120VAC +/- 10% to 277VAC +/- 10%.

The output is a 700mA dimmable constant current source. It complies with UL, CUL and CE standards for safety standards and EMC.

Low voltage dimming control is available when using the dedicated dimming control input leads, DIM(+) and DIM(-). The amplitude of the output LED string current will vary from 10% to 100% corresponding to a 1VDC to 10VDC signal on DIM(+) input following IEC 60929 Annex E.2.3. A minimum dim level of 10% shall be obtained with DIM(+) input shorted to DIM(-).

Key Features

- Energy Star Compliant
- > 50k Hour Life at 60°C
- Constant Current Output
- 0 – 10VDC, PWM and POT Dimmable
- Suitable for Damp Locations IP66
- Suitable for Plenum Locations
- Isolated Output, SELV
- High efficiency/Cool Running
- Universal AC Input
- UL, CUL, and CE Standards E337545
- EU ROHS, REACH Compliant
- Full Protection: OVP, SCP, OTP, Maximum Power Limit
- Small Compact Size

Applications

Worldwide Residential and Commercial LED Lighting Fixtures such as:

• LED Down Lights

EMERAL TECH. No.A-3, Xiuzhou High-Tech Industrial Park, Jiaxing City, ZJ 314001 China
Tel.: 86-573-82790696•Fax:86-573-82791779 • www.emeraltech.com•Email:sales@emeraltech.com •LED

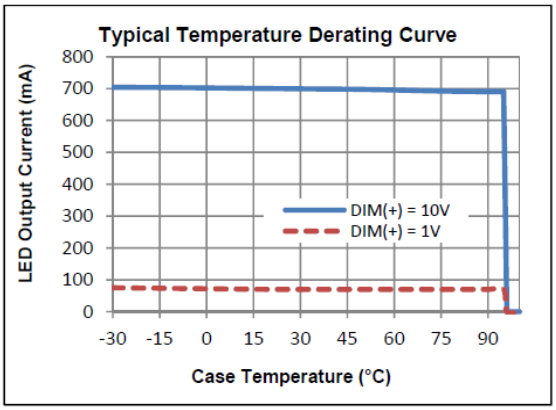
ELED Series

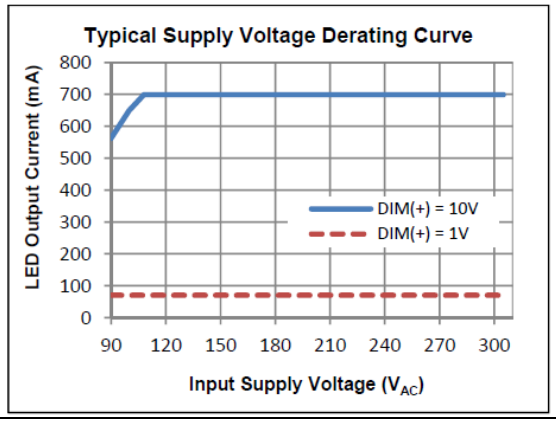
EMERALTECH

30W 700mA Dimmable HV LED Driver Module

ELED-0700030-S

Derating Curve





ABSOLUTE MAXIMUM RATINGS

AC Input Voltage.....0 to 305VAC

DIM(+) (relative to DIM(-)) .....-20V to 42.4V

DIM(+) Voltage (relative to OUTPUT(-)) ..... -20V to 42.4V

Operating Humidity ..... 5 to 95% (non-condensing)

Input Power ..... 38W (Internally Limited)

Output LED String Current .....810mA (Internally Limited)

Output String Voltage .....42.4V (Internally Limited)

Output Power .....34W (Internally Limited)

Case Storage Temperature Range .....-40°C to 105°C

Note: Exceeding these ratings could cause damage to the device. Currents are positive into, negative out of specified terminal.

TYPICAL OPERATING CONDITIONS

Parameter	Symbol	Test Conditions / Comment	Min	Type	Max	Units
LED String Output Voltage Range	VOUT(+)	At full load current	17		40	V
		At minimum load Current (Dimmed to 10%)	15			
OUT(-) Sink Current	OUT(-)ISINK	VDIM(+)		700		mA
Linear DIM(+) Control Input Voltage Range			0,95		10	V
	VDIM(+)_PWM	Open Collector Drive	200		1000	Hz
DIM(+) Control PWM Duty Cycle Range	VDIM(+)_DC		9.5		100	%

Part Number and Selection Information

Part Number	Input Voltage	Output Voltage Range and Full Scale Current (I_{FS})	Efficiency
ELED-0700030-S	**120V_{AC} to 277V_{AC}; 47 to 63Hz**	**17V to 40V at 700mA**	> 91

EMERAL TECH. No.A-3, Xiuzhou High-Tech Industrial Park, Jiaxing City, ZJ 314001 China

Tel.: 86-573-82790696•Fax:86-573-82791779 • www.emeraltech.com•Email:sales@emeraltech.com • LED

ELECTRICAL CHARACTERISTICS

The following specifications apply over the recommended operating temperature of -20°C to 60°C and the full input voltage range. Except where noted, testing is performed at 25°C, with 120VAC, 240VAC and 277VAC, VOUT = 37.5 ± 2.5V, IOUT = IFS

Parameter	Symbol	Test Conditions / Comment	Min	Type	Max	Units
Input Voltage	V_{IN}	Line Frequency 57 to 63 Hz	108		305	VAC
Input AC Current	I_{AC}	120VAC Input		0.265		A
	I_{AC}	120VAC Input		0.135		
	I_{AC}	120VAC Input		0.121		
Peak Inrush Current	I_{AC}	Measure at 277VAC Peak AC Line; Prior to first AC zero crossing		12		A
		Measure at 277VAC Peak AC Line; After first AC zero crossing		0.6	5	A
Power Factor	pF	VAC = 120VAC and 277VAC, maximum load	0.9			PF
Efficiency	η	VAC = 120VAC and 277VAC, maximum	80	90		%
Total Harmonic Distortion	THD	VAC = 120VAC and 277VAC, maximum load			10	%
OUTPUTS CURRENT SOURCE						
Average Sink Current	$I_{OUT(-)}$	VAC = 120VAC, 240VAC and 277VAC, full bright	95	100	105	%IFS
Line Regulation	$I_{OUT(-)}$	VAC = 120VAC and 277VAC, maximum load			1	%IFS
DC Controlled Dimming(Per IEC 60929, Annex E2.1 - 2.3)						
Dimming Control Voltage	V_{DIM}	Maximum Brightness	9.5			V
		Mid (50%) brightness	4.5	4.75	5.0	
		Minimum Brightness	0		1.05	
Output Current	I_{FS}	Maximum current; VDIM = 10V	665	700	735	
	$I_{OUT(-)}$	Mid Current ; VDIM = 4.75V	47.5	50	52.5	% of Max
		Minimum current; VDIM = 1V	8	10	12	
Dimming Control Current	I_{CONT}	I The LED Driver sources DIM current	1.19	1.25	1.37	mA
Start up						
Turn-on Time	T_{START}	Cold Start to 90% IFS		150	200	mS
Turn-off Time	$T_{TURNOFF}$	Full on to 10% IFS			100	
Power On Overshoot	$I_{OUT(-)}$	Turning Power On			60	%IFS
Operating ambient1	$T_{AMBIENT}$	Ambient implies air surrounding unit	-30		10	°C
Cold Start Temperature	T_{START}	Minimum cold start up temperature	-30			°C

Protection						
OV threshold	$V_{OUT(+)}$	Relative to VOUT- ; IOUT- = 0 (open circuit);	41	41.2	42.5	VPK
Maximum case hot spot	T_{SD}	Just prior to thermal shutdown.	90	105	110	°C

Safety & EMC Compliance	
UL	Compliance to UL8750 & UL1310 Class 2 File E337545
FCC Title 47, Part 15	Conducted and Radiated Emission, Class B
EN 61000-3-3	Voltage fluctuations and flicker
EN 61000-4-2	Electrostatic Discharge Immunity
EN 61000-4-3	Radiated Susceptibility test
EN 61000-4-4	Electrical Fast Transient
EN 61000-4-5	Surge Immunity Test, AC Power Line, Class3 (2kV)
EN 61000-4-6	Conducted Susceptibility Immunity test
EN 61000-4-8	Power Frequency Magnetic Field Immunity Test
EN 61000-4-11	Voltage Dips and Interruption Immunity
Life Expectancy	5 years / 50,000 hours @ 100% duty at maximum case temperature 55°
MTBF	221,569 hours, case temperature 55°; 121,565 hours case temperature 70°C Bellcore TR-NWT-332, Issue 6; Method 1, Case 3, Ground Benign
Environmental Standards	EU RoHS, REACH

LEAD DESCRIPTION

Name	Pin #	Description
INPUT TERMINAL LEADS (18AWG)		
BROWN	AC LINE	Main Input Power Supply Line 120VAC to 277VAC
BLUE	AC NEUTRAL	Main Input Power Supply Neutral
CONTROL TERMINAL LEADS (22-24AWG)		
PURPLE	DIM(+)	Analog Dimming Input (Full Brightness if Open
GRAY	DIM(-)	DIMMING RETURN
OUTPUT TERMINAL LEADS (18AWG)		
RED	OUTPUT(+)	LED String Anode Voltage (High Side)
YELLOW	OUTPUT(-)	OUTPUT (-) LED Cathode Voltage (Low Side) 700mA

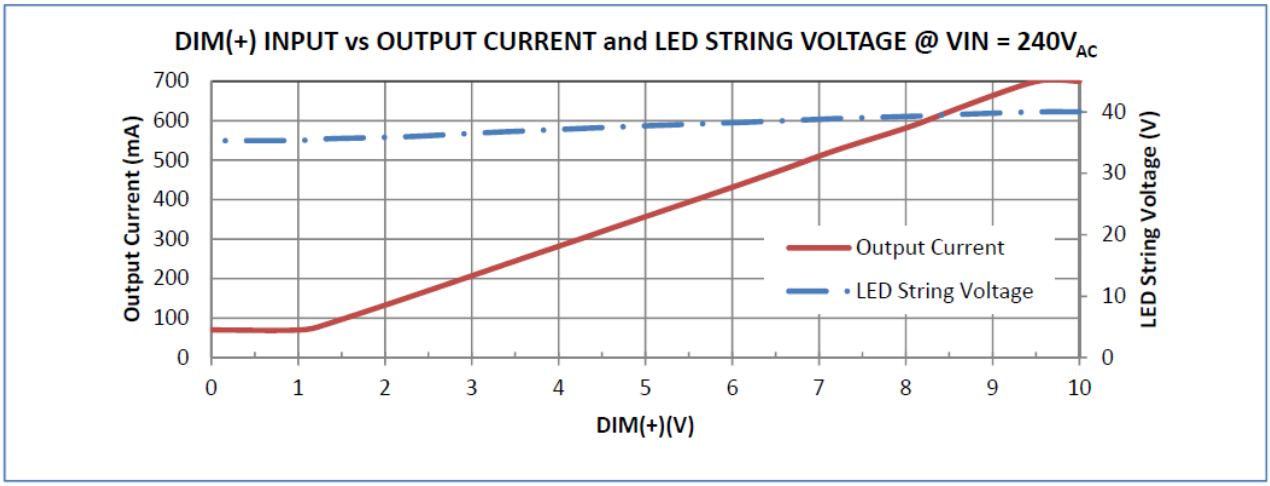
CONDITIONS OF ACCEPTABILITY

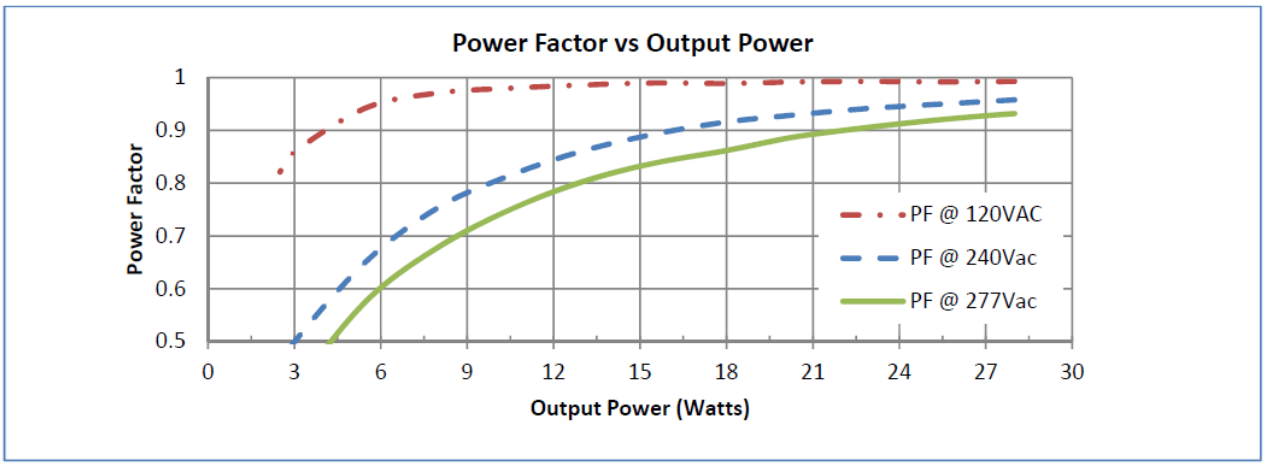
The components have been judged on the basis of the required spacings in the Standard for Class 2 Power Units, UL 1310.

The input and output leads are 18 AWG, rated 300V, 105ºC, VW-1. The suitability of the leads shall be determined in each enduse application. The leads are suitable for factory wiring only, and additional investigation will be required for

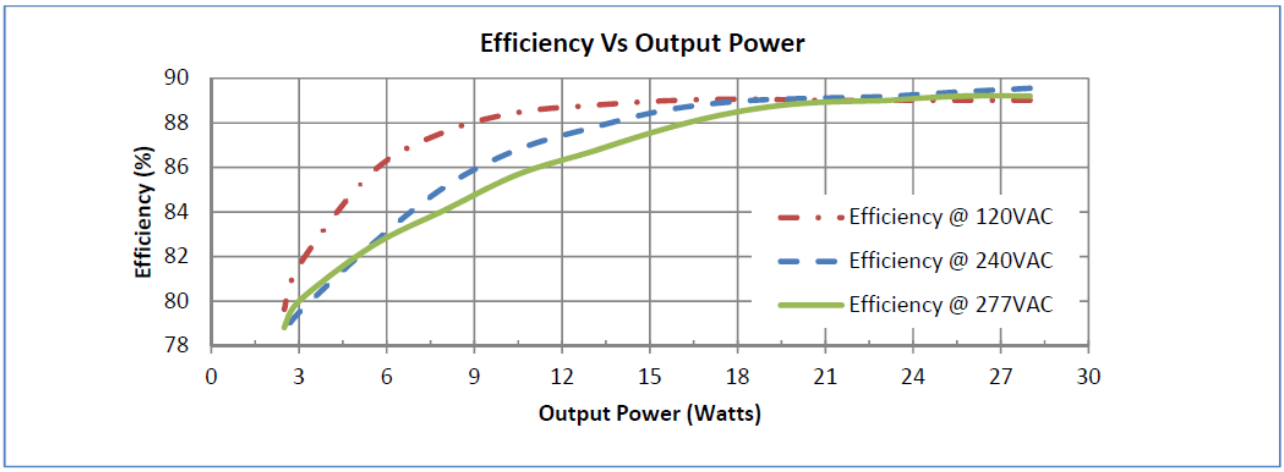
field wiring.
The polymeric housing is rated V-0 and has been subjected to a ball-impact test. The need for a suitable enclosure shall be considered in the end product.
The component has been evaluated for dry and damp locations, where the humidity conditioning and dielectric tests were conducted per UL 8750.
The maximum temperature measured on housing outside surface was 61.3°C during the Temperature Test when shifted to Ambient Temperature 40°C. The necessity of repeated Temperature Test shall be determined in each end use application.
A proper mechanical, electrical and fire enclosure shall be provided in the end-use application that is in compliance with all the applicable requirements of the end-use application.
Testing was on a 20 A branch circuit. If used on a branch circuit greater than this, additional testing may be necessary.
The LED driver is rated as noted in the Electrical Ratings Table above, and the outputs comply with the requirements for Class 2. The need for additional evaluation shall be considered in the end product if used beyond these ratings.
The LED driver is provided with dimmer leads for connecting an external dimmer. The leads colors are shown as below. The dimmer circuit is considered as Class 2 circuit. The routing of the Dimming leads shall be determined in the end use application.

TYPICAL CHARACTERISTIC CHARTS 25°C

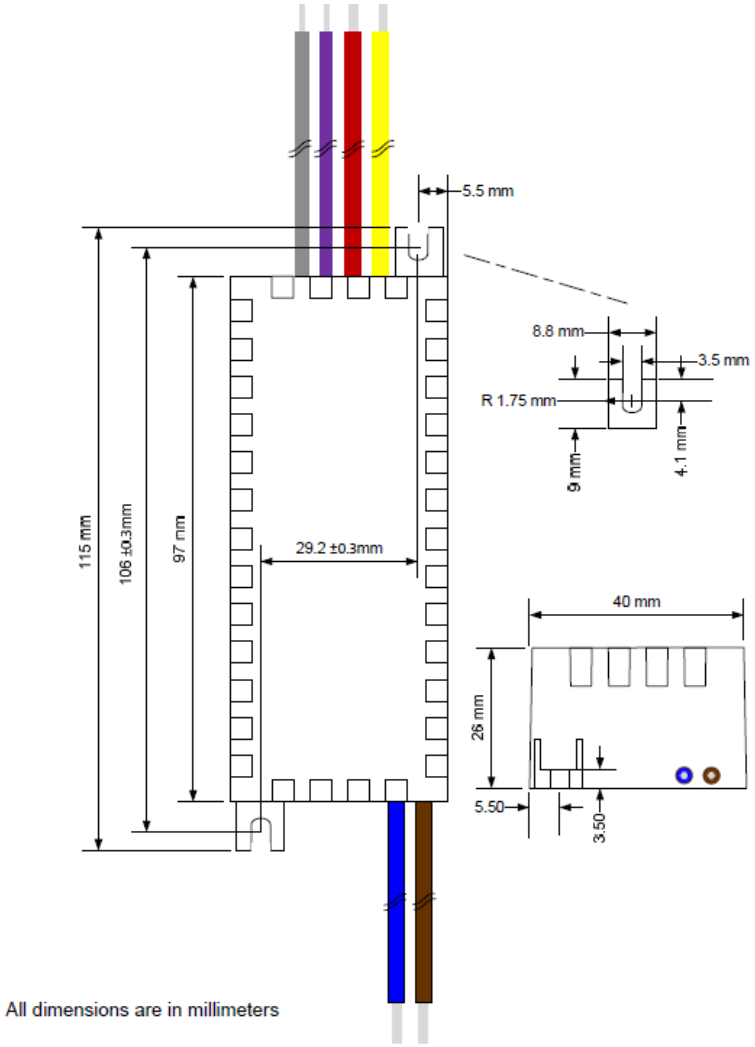




30W 700mA Dimmable HV LED Driver Module ELED-0700030-S



MECHANICAL DRAWING

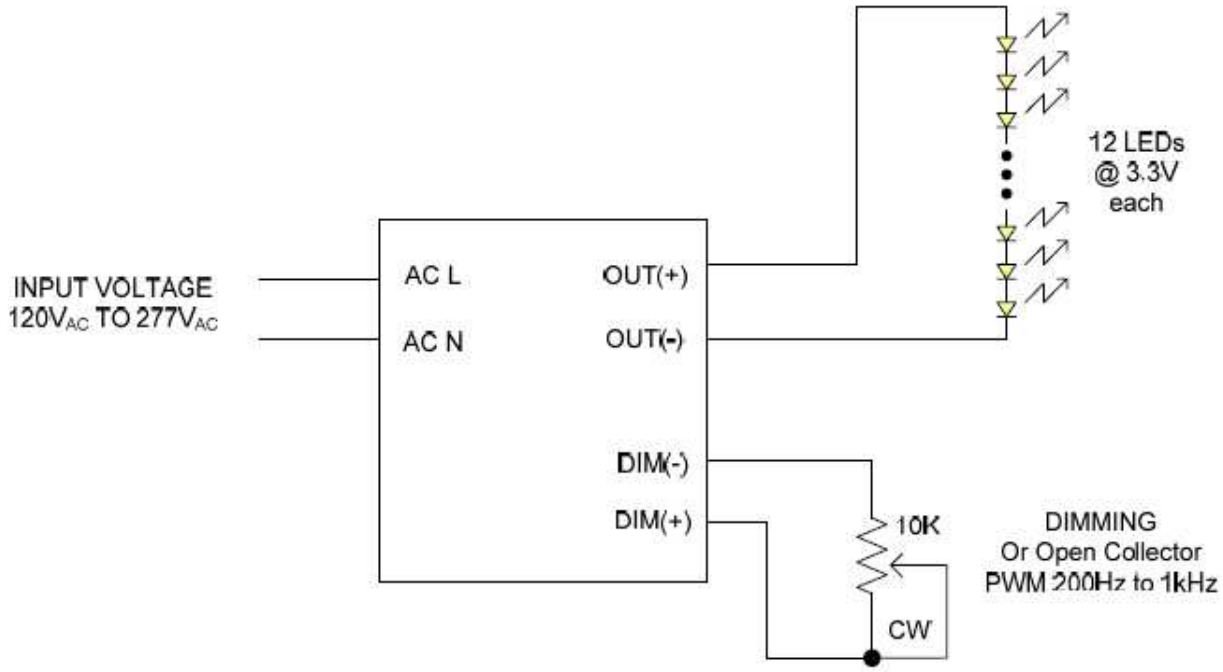


30W 700mA Dimmable HV LED Driver Module ELED-0700030-S

Wire length is 210mm ± 10mm, stripped 12mm ± 5mm UL1015 AWG#18 16/30 stranded 105°C Input & Output wires; AWG#22 or 24stranded Control wires, all wires tinned. Please insure the wire nuts are installed correctly to prevent intermittent operation. Connecting the AC input to Control or Output wires will result in damage to the module.

Lead Function	Color
AC LINE	BROWN
AC NEUTRAL	BLUE
OUTPUT(+)	RED
OUTPUT(-)	YELLOW
DIM(-)	GRAY
DIM(+)	PURPLE

APPLICATION INFORMATION



NOTES