



# SL POWER TE240 SERIES

240 Watts Single Output  
External Power Adapters



Advanced Energy’s SL Power TE240 series of desktop AC-DC external power adapter comprises six output models. All models feature industrial safety approvals and accept a universal input of 90 to 264 VAC. These compact switch-mode power supplies feature output overvoltage, overtemperature, overload protection, with short-circuit protection on all output models. TE240 series power adapters provide up to 240 Watts of output power with IP22 rated enclosure and meets DoE Efficiency Level VI Requirements.

## AT A GLANCE

### Total Power

Up to 240 Watts

### Input Voltage

90 to 264 VAC

### # of Outputs

Single

## SPECIAL FEATURES

- Universal Input 90 to 264 VAC Input Range Desktop Versions
- Up to 240 W of AC-DC Power
- IP22 Rated Enclosure\*
- Meets EN55011/CISPR11 FCC Part 15.109 Class B Conducted & Radiated Emissions, with 6db Margin
- Meets “Heavy Industrial” Levels of EN61000 EMC Requirements
- >7 Years E-Cap Life
- 3 Years Warranty
- Meets DoE Efficiency Level VI Requirements
  - No Load Input Power
  - Average Efficiency
- RoHS/REACH Compliant

## SAFETY

- CSA/IEC/EN/UL62368-1



Note: \*IP22 does not include interchangeable blade versions.

## ELECTRICAL SPECIFICATIONS

Input	
Input Range	90 to 264 VAC, 47 to 63 Hz, 1 $\emptyset$
Input Current	2.4 A @ 115 VAC, 1.2 A @ 230 VAC
Inrush Current	60 A max., cold start @ 264 VAC input
Input Fuses	F1, F2: 3.15A, 250VAC fuses (line & neutral lines) provided on all models
Earth Leakage Current	Input to GND <500 $\mu$ A @ 264 VAC, 60 Hz, NC Output to GND <4 mA @ 264 VAC, 60 Hz, NC
Efficiency	Meets US DoE Efficiency Level VI average efficiency levels
No Load Input Power	<0.21 W surpassing DoE Efficiency Level VI Requirements
Output	
Output Voltage	See models chart on page 4
Output Power	240 W continuous - See models chart for specific voltage model ratings
Turn On Time	Less than 1 Sec @ 115 VAC, full load
Hold-Up Time	20 mS min., at full load, 100 VAC input
Ripple and Noise	See models chart on page 4
Transient Response	500 $\mu$ s response time for return to within 0.5% of final value for any 50% load step over the range of 5% to 100% of rated load, $\Delta i/\Delta t < 0.2$ A/ $\mu$ s. Max voltage deviation is $\pm 3.5\%$
Reliability	
MTBF	>250,000 hours, full load, 110 & 220 VAC input, 25 $^{\circ}$ C amb., per Telcordia 332 Issue 6
E-Cap Life	>7 years life based on calculations at 115 VAC/60 Hz & 230 VAC/50 Hz, ambient 25 $^{\circ}$ C at 24 hrs per day, 365 days/year, 6 power up cycles per day. (80% load on 12 V model at 115 VAC)
Protection	
Overtemperature Protection	Will shutdown upon an overtemperature condition, auto-recovery
Overload Protection	115% to 160% of rating, hiccup mode
Overvoltage Protection	110% to 130% of output voltage (max. 60 V on 48 V model), hiccup mode
Short Circuit Protection	Hiccup mode, auto-recovery
Safety	
Safety Standards	Approved to EN/CSA/IEC/UL62368-1
Safety Drop Test	1.4 m from table top to wooden platform, 6 faces
Shock	Operating: Half-sine, 20 gpk, 10 mS, 3 axes, 6 shocks total Non-Operating: Half-sine waveform, impact acceleration of 50 G, Pulse duration of 6 mS Number of shocks: 3 for each of the three axis
Isolation	
Isolation	Input to Output: 4000 VAC Input to Ground: 1500 VAC Output to Ground: 500 VAC

Note:  
All specifications are typical at nominal input, full load, at 25 $^{\circ}$ C ambient unless noted.

## EMI/EMC COMPLIANCE

Conducted Emissions	EN55011/CISPR22 Class B, FCC Part 15.107, Class B: 6db margin type, at 115/230 VAC
Radiated Emissions	EN55022/CISPR22 Class B, FCC Part 15.109, Class B: 3db margin type, at 115/230 VAC
Common Mode Noise	High frequency (100 kHz to 20 MHz): <20 mA pk-pk Low frequency (50-120 Hz): <5 Vrms
Electro-Static Discharge (ESD) Immunity On Power Ports	EN55024/IEC61000-4-2, Level 4: ±8 kV contact, ±15 kV air, Criteria A
Radiated RF EM Fields Susceptibility	EN55022/EN61000-4-3, 10 V/m, 80 MHz to 2.7 GHz, 80% AM at 1 kHz
Electrical Fast Transients (EFT)/Burst Immunity	EN55024/IEC61000-4-4, Level 4, ±4 kV, 100 kHz rep rate, 40 A, Criteria A
Surges, Line to Line (Diff Mode) and Line to Ground (CMN Mode)	EN55024/IEC61000-4-5, Level 4, ±2 kV DM, ±4 kV CM, Criteria A
Conducted Disturbances Induced by RF Fields	EN55022/IEC61000-4-6, 10 Vrms - Level 3 in ISM and amateur radio bands between 0.15 MHz and 80 MHz, 80% AM at 1 kHz
Rated Power Frequency Magnetic Fields	EN55024/IEC1000-4-8, Level 4: 30 A/m, 50/60 Hz
Voltage Interruptions, Dips, Sags & Surges	EN55024/IEC/EN61000-4-11: --100% dip for 20 mS, Criteria A --100% dip for 5000 mS (250/300 cycles), Criteria B --60% dip for 100 mS, Criteria B --30% dip for 500 mS, Criteria A
Harmonic Current Emissions	EN55011/EN61000-3-2, Class A
Flicker Test	EN61000-3-3

## Note:

Above parameters will be tested to 20% margin at 10%, 50%, 100% load.

Performance criteria are based on EN55024. According to the standards, performance criteria are defined as following:

A - Normal performance during and after the test

B - Temporary degradation, self-recoverable

C - Temporary degradation, operator intervention required to recover the operation

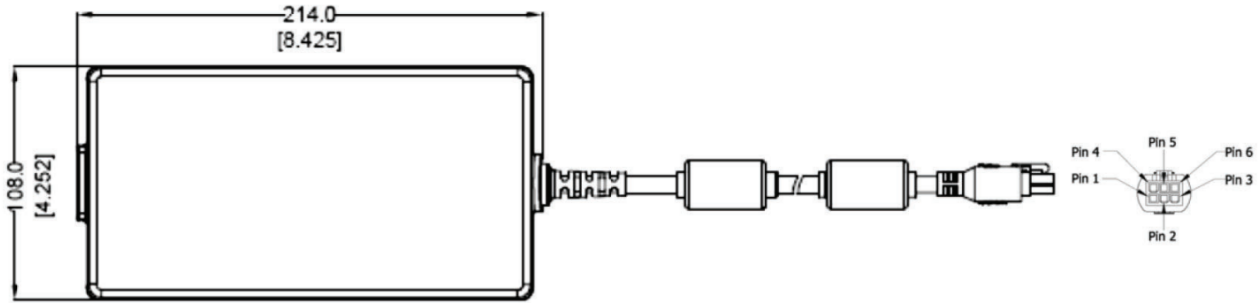
## ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to +70°C Derate above 40°C. Start Up at -30°C, Full load, (warmup period before all parameters are within published specifications)
Storage Temperature	-40°C to +85°C
Relative Humidity	5% to 95%, non-condensing
Weight	700 grams
Temperature Derating	See derating chart
Altitude	Operating: to 5000 m (derate to TBD temp. above 3000 m) Non-operating: -500 ft to 40000 ft
Vibration	Operating: 0.003 g/Hz, 1.5 grams overall, 3 axes, 10 min/axis, 1 Hz to 500 Hz Non-Operating: random waveform, 3 minutes/axis, 3 axes and sine waveform, Vib. frequency/acceleration: 10 to 500 Hz/1 g, sweep rate of 1 octave/minutes, Vibration time of 10 sweeps/axes, 3 axes
Case Temperature	Case Temperatures are within regulatory guidelines Care should be taken to avoid prolonged contact with skin or other heat sensitive surfaces.
Dimensions	W: 2.65" x L: 8.3" x H: 1.7" W: 67.4 mm x L: 212.4 mm x H: 45 mm

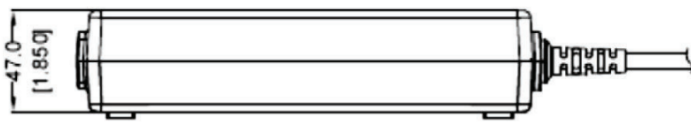
## Note:

All specifications are typical at nominal input, full load, at 25°C ambient unless noted.

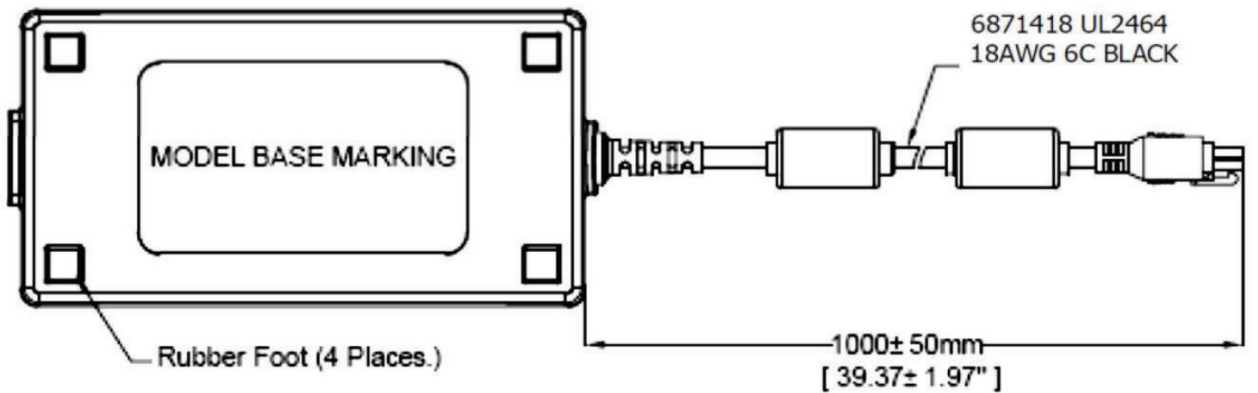
MECHANICAL DRAWING



ut IEC320/C14 Inlet



Connector Pinout:		
	12V Model	24V, 28V, 48V
Pin 1	+Vo	+Vo
Pin 2	RTN	NC
Pin 3	RTN	RTN
Pin 4	+Vo	+Vo
Pin 5	+Vo	NC
Pin 6	RTN	RTN










Notes:

1. All dimensions in mm.
2. The unit should not be covered or enclosed to protect against excessive case temperature rise.
3. The DC output is floating (ungrounded). For grounded output option (DC Return (-) to AC GND), change the letter "A" to "B" in the model number - TE240B1251F01. Class I input models only.
4. Pins 4,5,6 are located closest to the locking tab

LEADWIRE HOOK-UP		
PIN #	FUNCTION	COLOR
1	+V	RED
2	NC	-
3	COMMON	BLACK
4	+V	WHITE
5	NC	-
6	COMMON	GREEN
	BRAID	FG4

## CONNECTOR INFORMATION

Check with AE for suitability of specific connectors with certain models. Other connector options or different pinouts will require a modified model.

Connector No.	Description	Connector No.	Description
12	5-pin DIN - 180 male connector (Pins 3,5 = (+); pins 1,2,4 = (-)) 	49	4-pin Snap n Lock, Kycon Kpp - 4P or equivalent (Pins 1,3 = (+); pins 2,4 = (-)) 
22	6-pin DIN male connector (Pins 1,2 = (+); pins 4,5 = (-)) 	51	6-pin Minitit - Molex 39-01-2060 or equivalent (Pins 1,4 = (+); pins 3,6 = (-)) 
23	8-pin DIN male connector (Pins 3,7 = (+); pins 1,4,6,8 = (-); shell = FG) 	65	Stripped and tinned leads 
48	3-pin Snap n Lock, Kycon Kpp - 3P or equivalent (Pin 1 = (+); pin 2 = (-)) 		

## MODEL SELECTION

Model Number	Output Voltage	Output Current	Output Power	Ripple & Noise <sup>1</sup>	Line Regulation	Load Regulation	Output Connector	Input Configuration
TE240A1251F01	12.0 V	16.6 A	200 W	120mV pk-pk	± 1%	± 5%	6-pin Molex Type <sup>3</sup> p/n 39-01-2060 or equivalent See outline drawing for pinout information	Class I Desktop, IEC60320 C14 Receptacle <sup>3</sup>
TE240A1551F01	15.0 V	13.3 A	200 W	150mV pk-pk	± 1%	± 5%		
TE240A1851F01	18.0 V	11.1 A	200 W	180mV pk-pk	± 1%	± 5%		
TE240A2451F01	24.0 V	10.0 A	240 W	240mV pk-pk	± 1%	± 5%		
TE240A2851F01	28.0 V <sup>2</sup>	8.60 A	240 W	280mV pk-pk	± 1%	± 5%		
TE240A4851F01	48.0 V	5.00 A	240 W	480mV pk-pk	± 1%	± 5%		

## Notes:

- Measured at the output connector, with noise probe directly across output and load terminated with 0.1  $\mu$ F ceramic and 47  $\mu$ F low ESR capacitors.
- Consult factory for availability of 28V output model.
- The DC output is floating. For Input Class I models, AC GND is connected to output common (-), on models with the letter "B" inserted in the model number where the "A" is located: (TE240B1251F01).
- All specifications are typical at nominal input, full load, at 25°C ambient unless noted.

## INPUT CONFIGURATIONS

## AC Input Receptacle Options

Desktop



IEC320 - C14  
Class I  
Grounded  
(F)



IEC320 - C18  
Class II  
Ungrounded  
(Q)



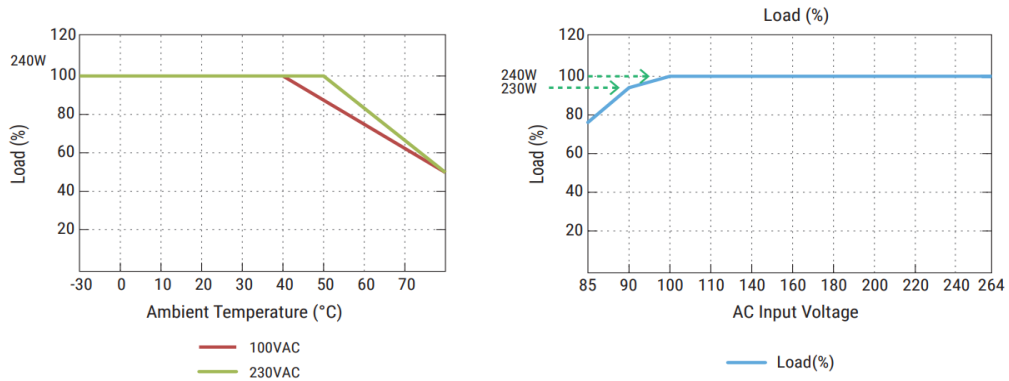
IEC320 - C8  
Class II  
"Shaver"  
(N)

Check with AE for availability of class II input models.

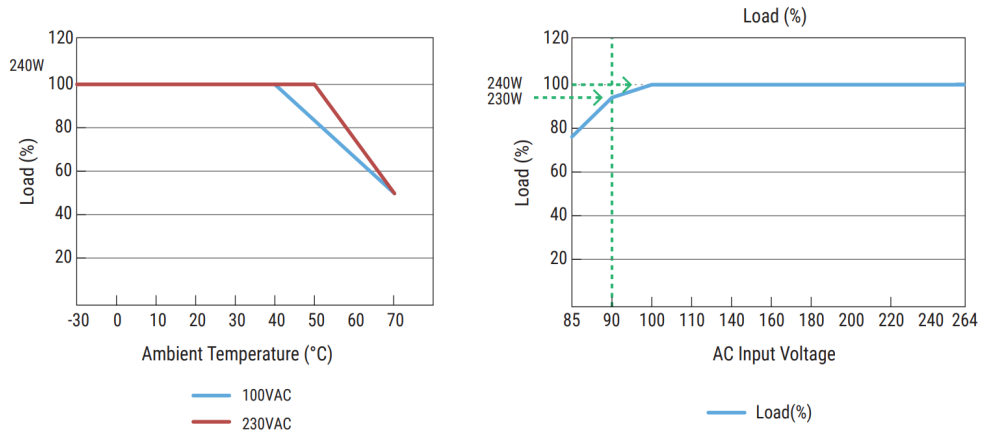
EFFICIENCY LEVEL VI INFORMATION

Single-Voltage External AC-DC Power Supply, Basic-Voltage		
Nameplate Output Power (Pout)	Minimum Average Efficiency in Active Mode (expressed as a decimal)	Maximum Power in No-Load Mode (W)
Pout ≤ 1 W	≥0.5 x Pout + 0.16	≤0.100
1 W < Pout ≤ 49 W	≥0.071 x ln (Pout) - 0.0014 x Pout + 0.67	≤0.100
<b>49 W &lt; Pout ≤ 250 W</b>	<b>≥0.880</b>	<b>≤0.210</b>
Pout > 250 W	≥0.875	≤0.500
Single-Voltage External AC-DC Power Supply, Low-Voltage		
Nameplate Output Power (Pout)	Minimum Average Efficiency in Active Mode (expressed as a decimal)	Maximum Power in No-Load Mode (W)
Pout ≤ 1 W	≥0.517 x Pout + 0.087	≤0.100
1 W < Pout ≤ 49 W	≥0.0834 x ln (Pout) - 0.0014 x Pout + 0.609	≤0.100
<b>49 W &lt; Pout ≤ 250 W</b>	<b>≥0.870</b>	<b>≤0.210</b>
Pout > 250 W	≥0.875	≤0.500

PERFORMANCE CURVES



12V Model Derating Curves



24V thru 48V Derating Curves



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## ABOUT ADVANCED ENERGY

Advanced Energy (AE) has devoted more than three decades to perfecting power for its global customers. AE designs and manufactures highly engineered, precision power conversion, measurement and control solutions for mission-critical applications and processes.

Our products enable customer innovation in complex applications for a wide range of industries including semiconductor equipment, industrial, manufacturing, telecommunications, data center computing, and medical. With deep applications know-how and responsive service and support across the globe, we build collaborative partnerships to meet rapid technological developments, propel growth for our customers, and innovate the future of power.

**PRECISION | POWER | PERFORMANCE | TRUST**

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