

SL POWER TE150 SERIES

150 Watts Single Output
External Power Adapters



Industrial



Advanced Energy's SL Power TE150 series of desktop AC-DC external power adapter comprises five 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. TE150 series power adapters provide up to 150 Watts of output power with IP22 rated enclosure and meets DoE Efficiency Level VI Requirements.

AT A GLANCE

Total Power

Up to 150 Watts

Input Voltage

90 to 264 VAC

of Outputs

Single

SPECIAL FEATURES

- Universal Input 90 to 264 VAC Input Range Desktop Versions
- Up to 150 W of AC-DC Power
- IP22 Rated Enclosure*
- Compact Size: 6.5" x 2.8" x 1.5"
- Meets EN55015/CISPR15, CISPR22, CISPR32, FCC Part 15.109 Class B Conducted & Radiated Emissions, with 6db Margin
- Meets "Heavy Industrial" Levels of EN61000 EMC Requirements
- >10 Years E-Cap Life
- 3 Years Warranty
- Meets DoE Efficiency Level VI and EU CoC Version 5, Tier 2 Requirements
 - No Load Input Power
 - Average Efficiency
- RoHS/REACH Compliant
- Blue LED Indicator

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, 1Ø
Input Current	1.6 A @ 115 VAC, 0.8 A @ 230 VAC
Inrush Current	70 A max., cold start @ 230 VAC input
Input Fuses	F1, F2: 3.15A, 250VAC fuses (line & neutral lines) provided on all models
Earth Leakage Current	<div>Input to GND <500 µA @ 264 VAC, 60 Hz, NC</div> <div>Output to GND <4 mA @ 264 VAC, 60 Hz, NC</div>
Efficiency	Meets US DoE Efficiency Level VI and EU CoC Version 5, Tier 2 average efficiency levels
No Load Input Power	<0.15 W surpassing DoE Efficiency Level VI and EU CoC Version 5, Tier 2 Requirements
Output	
Output Voltage	See models chart on page 4
Output Power	150 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	500µs 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, $\Delta i/\Delta t < 0.2 \text{ A}/\mu\text{s}$. Max voltage deviation is $\pm 3.5\%$
Reliability	
MTBF	>250,000 hours, full load, 115 & 230 VAC input, 25°C amb., per Telcordia SR-332 Issue 3
E-Cap Life	>10 years life based on calculations at 115 VAC/60 Hz & 230 VAC/50 Hz, ambient 25°C at 24 hrs per day, 365 days/year, 6 power up cycles per day. (80% load on 12 V model)
Protection	
Overtemperature Protection	Will shutdown upon an overtemperature condition, auto-recovery
Overload Protection	130% to 180% of rating, hiccup mode
Overvoltage Protection	115% to 130% of output voltage (max. 60 V on 48 V model), latching, recycle AC power to recover
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	<div>Operating: Half-sine, 20 gpk, 10 mS, 3 axes, 6 shocks total</div> <div>Non-Operating: Half-sine waveform, impact acceleration of 50 G, Pulse duration of 6 mS</div> <div>Number of shocks: 3 for each of the three axis</div>
Isolation	
Isolation	<div>Input to Output: 3000 VAC</div> <div>Input to Ground: 1500 VAC</div> <div>Output to Ground: 500 VAC</div>

Note:

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

EMI/EMC COMPLIANCE

Conducted Emissions	EN55015/CISPR15:2013 Class B, CISPR22:2006 Class B, CISPR32 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): <40 mA pk-pk
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, ±4.4 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, ±2.2 kV DM, ±4.4 kV CM, Criteria A
Conducted Disturbances Induced by RF Fields	EN55022/IEC61000-4-6, 10 Vrms - Level 4 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 & C (at 100% load)
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

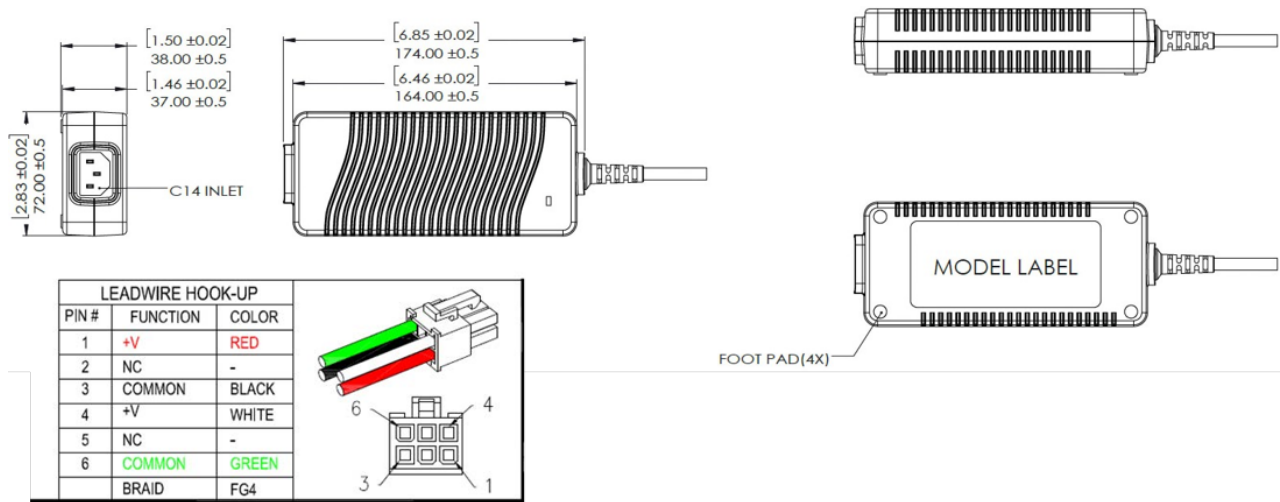
ENVIRONMENTAL SPECIFICATIONS

Operating Temperature	-20°C to +70°C Derate above 50°C. Ripple & Noise = 2% from -20°C to 0°C
Temperature Derating	Derate output power above 40°C to TBD at 50°C
Storage Temperature	-40°C to +85°C
Relative Humidity	5% to 95%, non-condensing
Weight	700 grams
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: 6.49" x L: 1.45" x H: 2.83" Case

Note:

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

MECHANICAL DRAWING



Notes:

1. All dimensions in mm.
2. The unit should not be covered or enclosed to protect against excessive case temperature rise.
3. Pins 4,5,6 are located closest to the locking tab.

MODEL SELECTION

Model Number	Output Voltage	Output Current	Output Power	Ripple & Noise ¹	Line Regulation	Load Regulation	Output Connector	Input Configuration
TE150A1251F01	12.0 V	12.50 A	150 W	120mV pk-pk	± 1%	± 5%	6-pin Molex Type ² 2.5 x 5.5 x 9.5mm Straight Barrel Type, Center Positive	Class I Desktop, IEC60320 C14 Receptacle ³
TE150A1551F01	15.0 V	10.00 A	150 W	150mV pk-pk	± 1%	± 5%		
TE150A1851F01	18.0 V	8.33 A	150 W	180mV pk-pk	± 1%	± 5%		
TE150A2451F01	24.0 V	6.25 A	150 W	240mV pk-pk	± 1%	± 5%		
TE150A4803F01	48.0 V	3.20 A	150 W	480mV pk-pk	± 1%	± 5%	6-pin Molex Type ² 2.5 x 5.5 x 9.5mm Straight Barrel Type, Center Positive	Class II Desktop, IEC60320 C8 Receptacle
TE150A1251N01	12.0 V	12.50 A	150 W	120mV pk-pk	± 1%	± 5%		
TE150A1551N01	15.0 V	10.00 A	150 W	150mV pk-pk	± 1%	± 5%		
TE150A1851N01	18.0 V	8.33 A	150 W	180mV pk-pk	± 1%	± 5%		
TE150A2451N01	24.0 V	6.25 A	150 W	240mV pk-pk	± 1%	± 5%	6-pin Molex Type ² 2.5 x 5.5 x 9.5mm Straight Barrel Type, Center Positive	Class II Desktop, IEC60320 C18 Receptacle
TE150A4803N01	48.0 V	3.20 A	150 W	480mV pk-pk	± 1%	± 5%		
TE150A1251Q01	12.0 V	12.50 A	150 W	120mV pk-pk	± 1%	± 5%		
TE150A1551Q01	15.0 V	10.00 A	150 W	150mV pk-pk	± 1%	± 5%		
TE150A1851Q01	18.0 V	8.33 A	150 W	180mV pk-pk	± 1%	± 5%		
TE150A2451Q01	24.0 V	6.25 A	150 W	240mV pk-pk	± 1%	± 5%		
TE150A4803Q01	48.0 V	3.20 A	150 W	480mV pk-pk	± 1%	± 5%		

Notes:

1. Measured at the output connector, with noise probe directly across output and load terminated with 0.1 µF ceramic and 10 µF low ESR capacitors.
2. Molex p/n 39-01-2060 or equivalent. See outline drawing for pinout information.
3. For input Class I models: For AC GND connected to output common (-), insert a "B" in the part number where the "A" is located (TE90B1251F01).
4. All specifications are typical at nominal input, full load, at 25°C ambient unless noted.

CONNECTOR INFORMATION

Standard 48 V models include a 2.5 x 5.5 x 9.5 mm straight barrel type connector (Ault #3), center positive. (#51 for the 12 V thru 24 V models). Other standard options are listed below. The “03” or “51” in the standard model number is replaced by the applicable digits below:

Connector No.	Description		Connector No.	Description	
02	2.1 x 5.5 x 9.5 mm straight barrel plug - Center positive		44	2.1 x 5.5 x 9.5 mm straight barrel plug, locking - Center positive	
03	2.5 x 5.5 x 9.5 mm straight barrel plug - Center positive (Standard models)		45	2.5 x 5.5 x 9.5 mm straight barrel plug, locking - Center positive	
12	5-pin DIN - 180 male connector (Pins 3,5 = (+); pins 1,2,4 = (-))		48	3-pin Snap n Lock, Kycon Kpp - 3P or equivalent (Pin 1 = (+); pin 2 = (-))	
22	6-pin DIN male connector (Pins 1,2 = (+); pins 4,5 = (-))		49	4-pin Snap n Lock, Kycon Kpp - 4P or equivalent (Pins 1,3 = (+); pins 2,4 = (-))	
23	8-pin DIN male connector (Pins 3,7 = (+); pins 1,4,6,8 = (-); shell = FG)		51	6-pin Minifit - Molex 39-01-2060 or equivalent (Pins 1,4 = (+); pins 3,6 = (-))	
32	9-pin “D” type, female (Pin 8 = (+); pin 5 = (-); all others = NC)		65	Stripped and tinned leads	
33	2.5 x 5.5 x 12.5 mm straight barrel plug - Center positive		70	2.1 x 5.5 x 11 mm right angle barrel plug (High retention) - Center positive	
40	2.1 x 5.5 x 9.5 mm right angle barrel plug - (High retention) - Center positive		71	2.5 x 5.5 x 11 mm right angle barrel plug (High retention) - Center positive	
41	2.5 x 5.5 x 9.5 mm right angle barrel plug - (High retention) - Center positive		72	2.1 x 5.5 x 9.5 mm straight barrel plug (High retention, no spark) - Center positive	
42	2.1 x 5.5 x 11 mm straight barrel plug - (High retention) - Center positive		73	2.5 x 5.5 x 9.5 mm straight barrel plug (High retention, no spark) - Center positive	
43	2.5 x 5.5 x 11 mm straight barrel plug - (High retention) - Center positive		74	EIAJ#5 style connector - Central positive	

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)
$P_{out} \leq 1 \text{ W}$	$\geq 0.5 \times P_{out} + 0.16$	≤ 0.100
$1 \text{ W} < P_{out} \leq 49 \text{ W}$	$\geq 0.071 \times \ln(P_{out}) - 0.0014 \times P_{out} + 0.67$	≤ 0.100
$49 \text{ W} < P_{out} \leq 250 \text{ W}$	≥ 0.880	≤ 0.210
$P_{out} > 250 \text{ W}$	≥ 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)
$P_{out} \leq 1 \text{ W}$	$\geq 0.517 \times P_{out} + 0.087$	≤ 0.100
$1 \text{ W} < P_{out} \leq 49 \text{ W}$	$\geq 0.0834 \times \ln(P_{out}) - 0.0014 \times P_{out} + 0.609$	≤ 0.100
$49 \text{ W} < P_{out} \leq 250 \text{ W}$	≥ 0.870	≤ 0.210
$P_{out} > 250 \text{ W}$	≥ 0.875	≤ 0.500



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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.

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