

# SL POWER ME90 Series

90 W Single Output External Power Adapter  
Medical Grade



Medical

Advanced Energy's SL Power ME90 series of desktop AC-DC external power adapter comprises four output models. All models feature medical safety approvals and accept a universal input of 90 to 264 VAC. ME90 series power adapters provide up to 90 Watts of output power with IP22 rated enclosure and are ideal for applications that are used in environments where AC mains power may be noisy or unstable and equipment shutdown is not an option.

## AT A GLANCE

### Total Power

90 Watts

### Input Voltage

90 to 264 VAC

### # of Outputs

Single

## SPECIAL FEATURES

- Approved to EN/IEC/UL60601-1, 3rd edition with isolation levels which satisfy the 2 MOPP requirements
- Desktop Style Package
- Up to 90 W of AC-DC Power
- IP22 Rated Enclosure
- Meets EN55011/CISPR11, FCC Part 15.109 Class B Conducted & Radiated Emissions, with 6db Margin
- Meets UL/EN/IEC60601-1-2, 4th edition for EMC
- >7 Years E-Cap Life
- >250,000 Hours MTBF
- 3 Years Warranty
- Meets DoE Efficiency Level VI Requirements
- RoHS Compliant

## SAFETY

- IEC/EN/UL60601-1, 3rd edition
- CE Mark
- UKCA Mark



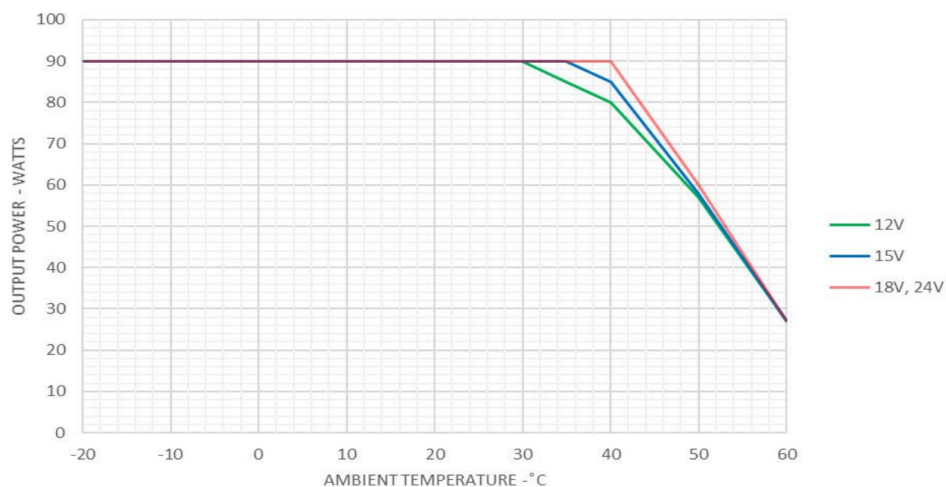
## ELECTRICAL SPECIFICATIONS

Input	
Input range	100 to 240 VAC, $\pm 10\%$ , 47 to 63 Hz, 1 $\phi$
Input current	2.0 A @ 115 VAC, 1.0 A @ 230 VAC
Inrush current	60 A max., cold start @ 264 VAC input
Input fuses	F1, F2: 3.15 A, 250 VAC fuses (line & neutral lines) provided on all models
Leakage current	<div>Input to GND</div> <div>Output to Earth</div> <div>&lt;500 <math>\mu</math>A @ 264 VAC, 60 Hz, NC</div> <div>&lt;100 <math>\mu</math>A @ 264 VAC, 60 Hz, NC</div>
Efficiency	88%, Typical
Common Mode Noise	High frequency (100kHz to 20MHz); <40mA pk-pk
No load input power	<0.21 W per DoE Efficiency Level VI Requirements
Output	
Output voltage	See models chart on page 5
Output power	90 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 5
Transient response	<div>500 <math>\mu</math>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, <math>\Delta i/\Delta t &lt; 0.2</math> A/<math>\mu</math>S.</div> <div>Max. voltage deviation is <math>\pm 3.5\%</math></div>
Regulation	See models chart on page 5
Reliability	
MTBF	>250,000 hours, full load, 110 VAC & 220 VAC input, 25°C amb., per Telcordia 332 Issue 6, Stress Method
E-cap Life	>7 years life based on calculations at 115VAC/60Hz & 230VAC/50Hz, ambient 25°C at 24 hrs per day, 365 days/year, 6 power up cycles per day (80% load on 5V, 12V models)
Protection	
Overtemperature protection	Will shutdown upon an overtemperature condition, auto-recovery
Overload protection	130% to 180% of rating, hiccup mode
Overvoltage protection	130% to 150% of output voltage, hiccup mode
Short circuit protection	Hiccup mode, auto-recovery
Safety	
Safety standards	Approved to EN/IEC/UL60601-1, 3rd edition
Drop test	1.4 m from table top to wooden platform, 4 faces
Isolation	
Isolation	<div>Input to Output: 4000 VAC</div> <div>Input to Ground: 1500 VAC</div> <div>Output to Ground: 1500 VAC</div>

Note:

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

## DERATING CHART



## EMI/EMC COMPLIANCE

Conducted emissions	IEC60601-1-2/EN55011/CISPR11 Class B, FCC Part 15, Class B, 6db margin typ., at 115 VAC and 230VAC
Radiated emissions	IEC60601-1-2/EN55011/CISPR11 Class B, FCC Part 15, Class B, 3db margin typ., at 115 VAC and 230VAC
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, 3.6V/m - Level 4, 0.15 MHz to 80 MHz; and 12 V/m 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 Hz / 60 Hz
Voltage interruptions, Dips, Sags & Surges	EN55024/IEC/EN61000-4-11: --100% dip for 10mS, at 0, 45, 90, 135, 180, 225, 270 and 315 degrees, Criteria A --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:

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

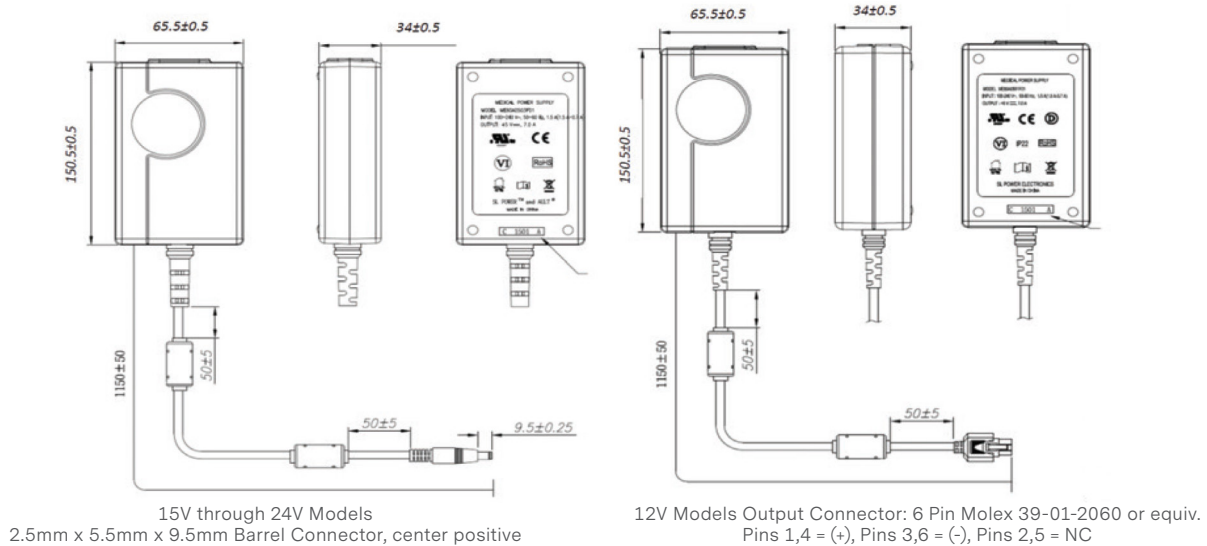
## ENVIRONMENTAL SPECIFICATIONS

Operating temperature	-20°C to +50°C. Derate above 40°C Start up at -40°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	600 grams
Temperature derating	See derating chart
Altitude	Operating: to 5000 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: 10Hz to 500 Hz/1g, sweep rate of 1 oct/minutes, Vibration time of 10 sweeps/axes, 3 axes
Shock	Operating: Half-sine, 20gpk, 10ms, 3 axes, 6 shocks total Non-operating: Half-sine waveform Impact acceleration of 100G, Pulse duration of 6ms Number of shocks: 3 for each of the three axis
Dimensions (W x L x H)	2.58" x 5.9" x 1.34" ( 65.5mm x 150.5mm x 34mm)

Note:

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

## MECHANICAL DRAWING

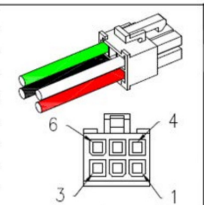


Notes:

1. All dimensions in mm.
2. 2.5mm barrel connector shown, other options are available.
3. The unit should not be covered or enclosed to protect against excessive case temperature rise.
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



## ORDERING INFORMATION

Model Number	Volts	Output Current	Output Power	Ripple & Noise <sup>1</sup>	Line Regulation	Load Regulation	Output Connector	Input Configuration
ME90A1251F01	12.0 V	7.50 A	90 W	120mV pk-pk	± 1%	± 5%	6Pin Molex Type <sup>2</sup> 2.5 x 5.5 x 9.5mm Straight Barrel Type, Center Positive	Class I Desktop, IEC60320 C14 Receptacle
ME90A1503F01	15.0 V	6.00 A	90 W	150mV pk-pk	± 1%	± 5%		
ME90A1803F01	18.0 V	5.00 A	90 W	180mV pk-pk	± 1%	± 5%		
ME90A2403F01	24.0 V	3.75 A	90 W	240mV pk-pk	± 1%	± 5%		
ME90A1251N01	12.0 V	7.50 A	90 W	120mV pk-pk	± 1%	± 5%	6Pin Molex Type <sup>2</sup> 2.5 x 5.5 x 9.5mm Straight Barrel Type, Center Positive	Class II Desktop, IEC60320 C8 Receptacle
ME90A1503N01	15.0 V	6.00 A	90 W	150mV pk-pk	± 1%	± 5%		
ME90A1803N01	18.0 V	5.00 A	90 W	180mV pk-pk	± 1%	± 5%		
ME90A2403N01	24.0 V	3.75 A	90 W	240mV pk-pk	± 1%	± 5%		
ME90A1251Q01	12.0 V	7.50 A	90 W	120mV pk-pk	± 1%	± 5%	6Pin Molex Type <sup>2</sup> 2.5 x 5.5 x 9.5mm Straight Barrel Type, Center Positive	Class II Desktop, IEC60320 C18 Receptacle
ME90A1503Q01	15.0 V	6.00 A	90 W	150mV pk-pk	± 1%	± 5%		
ME90A1803Q01	18.0 V	5.00 A	90 W	180mV pk-pk	± 1%	± 5%		
ME90A2403Q01	24.0 V	3.75 A	90 W	240mV pk-pk	± 1%	± 5%		

## Notes:

1. Measured at the output connector, with noise probe directly across output and load terminated with 0.1  $\mu$ F ceramic and 10  $\mu$ F 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 (ME90B1251F01).
4. All specifications are typical at nominal input, full load, at 25°C ambient unless noted.

## CONNECTOR INFORMATION

Standard models include a 2.5mm x 5.5mm x 9.5mm straight barrel type connector (Ault #3), center positive. Other standard options are listed below. The "03" 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		45	2.5 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)		48	3-pin Snap n Lock, Kycon Kpp - 3P or equivalent (Pin 1 = (+); pin 2 = (-))	
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 Minifit - 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	
32	9-pin "D" type, female (Pin 8 = (+); pin 5 = (-); all others = NC)		70	2.1 x 5.5 x 11 mm right angle barrel plug (High retention) - Center positive	
33	2.5 x 5.5 x 12.5 mm straight barrel plug - Center positive		71	2.5 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		72	2.1 x 5.5 x 9.5 mm straight barrel plug (High retention, no spark) - Center positive	
41	2.5 x 5.5 x 9.5 mm right angle 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	
42	2.1 x 5.5 x 11 mm straight barrel plug - (High retention) - Center positive		74	EIAJ#5 style connector - Central positive	
43	2.5 x 5.5 x 11 mm straight barrel plug - (High retention) - Center positive		99	Micro USB	
44	2.1 x 5.5 x 9.5 mm straight barrel plug, locking - Center positive				



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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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