



Features

- Meets UL/EN/IEC60601-1-2, 4th edition for EMC*
- Approved to EN/IEC/UL60601-1, 3rd edition with isolation levels which satisfy the 2 MOPP requirements
- Meets DoE Efficiency Level VI Requirements
 - No load input power
 - Average Efficiency
- Up to 90W of AC-DC Power
- Universal Input 90-264Vac Input Range
- Desktop Style Package
- Meets EN55011/CISPR11, FCC Part 15.109 Class B Conducted & Radiated Emissions, with 6db margin
- E-cap life of >7 years
- 3 Year Warranty
- IP22 Rated Enclosure

Description

A high performance AC to DC external power supply family designed for medical applications. The ME90 Medical Series external AC-DC power supplies are approved to safety EN/IEC/UL60601-1, 3rd edition with isolation levels which satisfy the 2 MOPP requirements and designed to UL/EN/IEC60601-1-2, 4th edition for EMC*. The ME90 Series models will operate at universal input range of 90 to 264Vac over the wide temperature range of -20°C to +50°C, delivering full rated output power up to +40°C and applicable output power derating at 50°C. These models are available in desktop versions, include an IP22 rating per IEC60529 for the enclosure, and the output cable can be terminated at a variety of output connectors.

*Professional Equipment only. Consult Factory for Table 9 compliance information.

Model Selection

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

Notes: 1. Measured at the output connector, with noise probe directly across output and load terminated with 0.1µF ceramic and 10µF 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).

General Specifications

<u>Parameter</u>	<u>Specification</u>	<u>Parameter</u>	<u>Specification</u>
AC Input	100-240Vac, ±10%, 47-63Hz, 1Ø	Turn On Time	Less than 1 sec @115Vac, full load
Input Current	115Vac: 2.0A, 230Vac: 1.0A	Hold-up Time	20mS min., at full Load, 100Vac input
Inrush Current	264Vac, cold start: will not exceed 60A	Overtemperature Protection	Will shutdown upon an overtemperature condition, auto-recovery.
Input Fuses	F1, F2: 3.15A, 250Vac fuses (line & neutral lines) provided on all models	Overload Protection	130 to 180% of rating, Hiccup Mode
Earth Leakage Current (Input to Ground)	<500µA@264Vac, 60Hz, NC <1mA@264Vac, 60Hz, SFC	Short Circuit Protection	Hiccup Mode, auto recovery.
Patient Leakage Current (Output to Earth)	<100µA@264Vac, 60Hz, NC <500µA@264Vac, 60Hz, SFC	Overvoltage Protection	130 to 150% of output voltage, hiccup mode
Efficiency	>88%, typical	Isolation	Input-Output: 2 MOPP Input-Ground: 1 MOPP Output-Ground: 1 MOPP
Output Power	90W continuous – See models chart for specific voltage model ratings.	Safety Standards	EN/IEC/UL60601-1, 3rd edition
No Load Input Power	<0.210W (meets DoE Efficiency Level VI Requirements)	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).
Ripple and Noise	See models chart on pg 1.	Storage Temperature	-40°C to +85°C
Output Voltage	See models chart on pg 1.	Altitude	Operating: to 5000m. Non-operating: -500 to 40,000 ft.
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, $\Delta i/\Delta t < 0.2A/\mu s$. Max. voltage deviation is +/-3.5%.	Relative Humidity	5% to 95%, non-condensing
Regulation	See models chart on pg 1.	Drop Test	1.4m from table top to wooden platform, 4 faces.
Vibration	Operating: 0.003g/Hz, 1.5grms overall, 3 axes, 10 min/axis, 1-500Hz. Non-Oper.: random waveform, 3 minutes per axis, 3 axes and Sine waveform, Vib. frequency/acceleration: 10-500Hz/1g, sweep rate of 1 octave / 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 6 mS, Number of shocks: 3 for each of the three axis
Dimensions	W: 2.58" x L: 5.9" x H: 1.34" W: 65.5mm x L: 150.5Mm x H: 34mm	MTBF	>250,000 hours, full load, 110 & 220Vac input, 25°C amb., per Telcordia 332 Issue 6.
Weight	600g	E-Cap Life	>7 year 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 model)

EMI/EMC Compliance

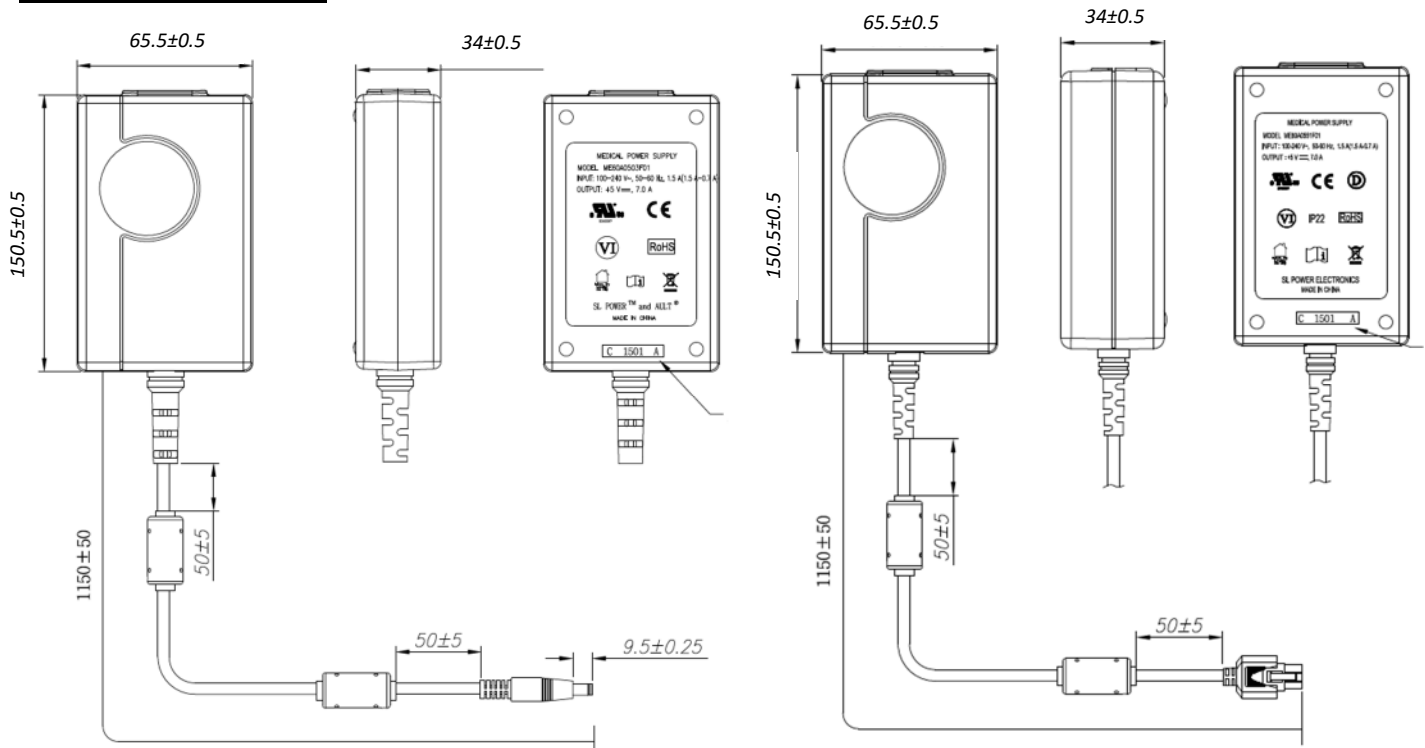
<u>Parameter</u>	<u>Specification</u>
Conducted Emissions:	EN55011/CISPR11 Class B, FCC Part 15.107, Class B: 6db margin typ, at 115 and 230Vac
Radiated Emissions:	EN55011/CISPR11 Class B, FCC Part 15.109, Class B: 3db margin typ, at 115 and 230Vac
Common Mode Noise:	High Frequency (100kHz-20MHz): <40mA pk-pk
Electro-Static Discharge (ESD) Immunity on Power ports:	EN55024/IEC61000-4-2, Level 4: +/- 8kV contact, +/- 15kV air, Criteria A IEC60601-1-2, 4 th Edition, Table 4
Radiated RF EM Fields Susceptibility	EN55024/EN61000-4-3, 10V/m, 80MHz-2.7GHz, 80% AM at 1kHz IEC60601-1-2, 4 th Edition, Table 4
Electrical Fast Transients (EFT) /Bursts:	EN55024/IEC61000-4-4, Level 4, +/- 4kV, 100Khz rep rate, 40A, Criteria A IEC60601-1-2, 4 th Edition, Table 5
Surges, Line to Line (Diff Mode) and Line to GND (CMN Mode)	EN55024/IEC61000-4-5, Level 4, +/-2kV DM, +/-4kV CM, Criteria A Surpasses IEC60601-1-2, 4 th Edition requirements.
Conducted Disturbances induced by RF Fields	EN55024/IEC61000-4-6, 3.6V/m – Level 4, 0.15 to 80Mhz; and 12V/m) in ISM and amateur radio bands between 0.15Mhz and 80Mhz, 80% AM at 1KHz IEC60601-1-2, 4 th Edition, Table 5.
Rated Power frequency magnetic fields	EN55024/IEC1000-4-8, Level 4: 30A/m, 50/60 Hz IEC60601-1-2, 4 th Edition, Table 4
Voltage Interruptions, Dips, Sags & Surges	EN55024/IECEN61000-4-11: --100% dip for 10 mS, at 0, 45, 90, 135, 180, 225, 270 and 315 degrees, Criteria A; 100% dip for 20mS, Criteria A --100% dip for 5000mS (250/300 cycles), Criteria B --60% dip for 100mS, Criteria B --30% dip for 500mS, Criteria A IEC60601-1-2, 4 th Edition, Table 5
Harmonic Current Emissions	EN55011/EN61000-3-2, Class A
Flicker Test	EN61000-3-3

All specifications are typical at nominal input, full load, at 25°C ambient unless noted. Consult factory for information regarding testing for or usage under special environments.

Note: Performance criteria are based 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
- D – Permanent damage

Mechanical Drawing



15V through 24V Models: 2.5 x 5.5 x 9.5mm
Barrel Connector, center positive.

12V Models: Output Connector: 6 pin Molex 39-01-2060
or equiv. Pins 1, 4 = (+), pins 3, 6 = (-), pins 2, 5 = NC

- 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.

Connector Information

Standard models include a 2.5 x 5.5 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:

<p>No.02</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 2.1 x 5.5 x 9.5mm straight barrel plug - Center Positive 	<p>No.03</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 2.5 x 5.5 x 9.5mm straight barrel plug Center Positive (Standard Models) 	<p>No.12</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 5 pin DIN-180 male connector (Pins 3, 5 = (+), pins 1, 2, 4 = (-)) 	<p>No.22</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 6 pin DIN male connector (Pins 1, 2 = (+), pins 4, 5 = (-)) 	<p>No.23</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 8 pin DIN male connector (Pins 3, 7 = (+), pins 1, 4, 6, 8 = (-), shell = FG) 	<p>No.32</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 9 pin "D" type, female (Pin 8 = (+), pin 5 = (-), all others = NC)
<p>No.33</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 2.5 x 5.5 x 12.5mm straight barrel plug - Center Positive 	<p>No.40</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 2.1 x 5.5 x 9.5mm right angle barrel plug (high retention) Center Positive 	<p>No.41</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 2.5 x 5.5 x 9.5mm right angle barrel plug (high retention) Center Positive 	<p>No.42</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 2.1 x 5.5 x 11mm straight barrel plug (high retention) Center Positive 	<p>No.43</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 2.1 x 5.5 x 11mm straight barrel plug (high retention) Center Positive 	<p>No.44</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 2.1 x 5.5 x 9.5mm straight barrel plug, locking - Center Positive
<p>No.45</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 902.5 x 5.5 x 9.5mm straight barrel plug, locking Center Positive 	<p>No.48</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 3 pin Snap n Lock, Kycon Kpp-3P or equivalent (Pin 1 = (+), pin 2 = (-)) 	<p>No.49</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 4 pin Snap n Lock, Kycon Kpp-4P or equivalent (Pins 1, 3 = (+), pins 2, 4 = (-)) 	<p>No.51</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 6 pin Minitit - Molex 39-01-2060 or equivalent (Pins 1, 4 = (+), pins 3, 6 = (-)) 	<p>No.65</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • Stripped and Tinned Leads 	<p>No.70</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 2.1 x 5.5 x 11mm right angle barrel plug (high retention) Center Positive
<p>No.71</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 2.5 x 5.5 x 11mm right angle barrel plug (high retention) Center Positive 	<p>No.72</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 2.1 x 5.5 x 9.5mm straight barrel plug (high retention, no spark) Center Positive 	<p>No.73</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • 2.5 x 5.5 x 9.5mm straight barrel plug (high retention, no spark) Center Positive 	<p>No.74</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • EIAJ#5 style connector Center Positive 	<p>No.99</p>  <p>CONNECTOR</p> <ul style="list-style-type: none"> • Micro USB 	

These are the most common standard connectors. SL Power has the capability to incorporate any non-standard output connector. All output connectors are limited by wattage range and application type. The SL Power applications team is available to provide professional support and can be contacted here: info@slpower.com.

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