



## 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 <sup>1</sup>	Line Regulation	Load Regulation	Output Connector	Input Configuration
ME90A1251F01	12.0V	7.50A	90W	120mV pk-pk	±1%	±5%	6 pin Molex Type <sup>2</sup>	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%		
ME90A1251N01	12.0V	7.50A	90W	120mV pk-pk	±1%	±5%	6 pin Molex Type <sup>2</sup>	Class II Desktop, IEC60320 C8 Receptacle
ME90A1503N01	15.0V	6.00A	90W	150mV pk-pk	±1%	±5%	2.5 x 5.5 x 9.5mm	
ME90A1803N01	18.0V	5.00A	90W	180mV pk-pk	±1%	±5%	Straight Barrel Type, center positive	
ME90A2403N01	24.0V	3.75A	90W	240mV pk-pk	±1%	±5%		
ME90A1251Q01	12.0V	7.50A	90W	120mV pk-pk	±1%	±5%	6 pin Molex Type <sup>2</sup>	Class II Desktop, IEC60320 C18 Receptacle
ME90A1503Q01	15.0V	6.00A	90W	150mV pk-pk	±1%	±5%	2.5 x 5.5 x 9.5mm	
ME90A1803Q01	18.0V	5.00A	90W	180mV pk-pk	±1%	±5%	Straight Barrel Type, center positive	
ME90A2403Q01	24.0V	3.75A	90W	240mV pk-pk	±1%	±5%		

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

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

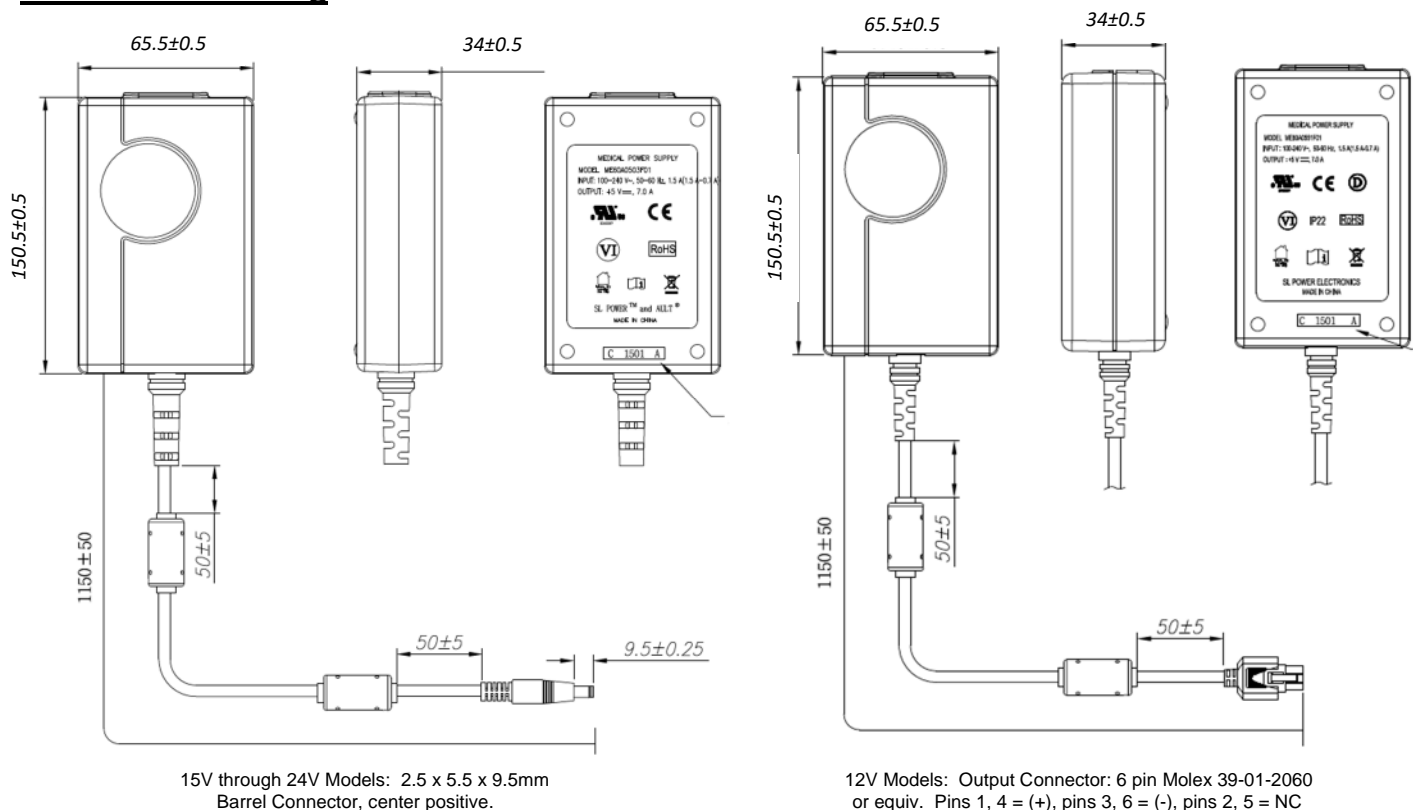
## General Specifications (CONTINUED)

<b>Inrush Current</b>	264Vac, cold start: will not exceed 60A	<b>Overtemperature Protection</b>	Will shutdown upon an overtemperature condition, auto-recovery.
<b>Input Fuses</b>	F1, F2: 3.15A, 250Vac fuses (line & neutral lines) provided on all models	<b>Overload Protection</b>	130 to 180% of rating, Hiccup Mode
<b>Earth Leakage Current</b>	Input-GND: <500 $\mu$ A@264Vac, 60Hz, NC Output-GND: <4mA@264Vac, 60Hz, NC	<b>Short Circuit Protection</b>	Hiccup Mode, auto recovery.
<b>Efficiency</b>	>88%, typical	<b>Overvoltage Protection</b>	130 to 150% of output voltage, hiccup mode
<b>Output Power</b>	90W continuous – See models chart for specific voltage model ratings.	<b>Isolation</b>	Input-Output: 2 MOPP Input-Ground: 1 MOPP Output-Ground: 1 MOPP
<b>No Load Input Power</b>	<0.210W (meets DoE Efficiency Level VI Requirements)	<b>Safety Standards</b>	EN/IEC/UL60601-1, 3rd edition
<b>Ripple and Noise</b>	See models chart on pg 1.	<b>Operating Temperature</b>	-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).
<b>Output Voltage</b>	See models chart on pg 1.	<b>Temperature Derating</b>	Derate output power above 40°C to TBD at 50°C
<b>Transient Response</b>	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, $\Delta i/\Delta t$ < 0.2A/ $\mu$ s. Max. voltage deviation is +/-3.5%.	<b>Storage Temperature</b>	-40°C to +85°C
<b>Regulation</b>	See models chart on pg 1.	<b>Altitude</b>	Operating: to 5000m. Non-operating: -500 to 40,000 ft.
<b>Drop Test</b>	1.4m from table top to wooden platform, 4 faces.	<b>Relative Humidity</b>	5% to 95%, non-condensing
<b>Vibration</b>	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	<b>Shock</b>	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
<b>Dimensions</b>	W: 2.58" x L: 5.9" x H: 1.34" W: 65.5mm x L: 150.5Mm x H: 34mm	<b>MTBF</b>	>250,000 hours, full load, 110 & 220Vac input, 25°C amb., per Telcordia 332 Issue 6.
<b>Weight</b>	600g	<b>E-Cap Life</b>	>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

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 <sup>th</sup> 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 <sup>th</sup> 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 <sup>th</sup> 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 <sup>th</sup> 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 <sup>th</sup> Edition, Table 5.
Rated Power frequency magnetic fields	EN55024/IEC1000-4-8, Level 4: 30A/m, 50/60 Hz IEC60601-1-2, 4 <sup>th</sup> 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 <sup>th</sup> Edition, Table 5
Harmonic Current Emissions	EN55011/EN61000-3-2, Class A
Flicker Test	EN61000-3-3























## Mechanical Drawing



- 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:

Connector No.	Description		Connector No.	Description	
02	2.0 x 5.5 x 9.5mm straight barrel plug - Center Positive		44	2.0 x 5.5 x 9.5mm straight barrel plug, locking - Center Positive	
03	2.5 x 5.5 x 9.5mm straight barrel plug - Center Positive (Standard Models)		45	2.5 x 5.5 x 9.5mm 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 12.5mm straight barrel plug - Center Positive		70	2.0 x 5.5 x 11mm right angle barrel plug (high retention) - Center Positive	
40	2.0 x 5.5 x 9.5mm right angle barrel plug (high retention) - Center Positive		71	2.5 x 5.5 x 11mm right angle barrel plug (high retention) - Center Positive	
41	2.5 x 5.5 x 9.5mm right angle barrel plug (high retention) - Center Positive		72	2.0 x 5.5 x 9.5mm straight barrel plug (high retention, no spark) - Center Positive	
42	2.0 x 5.5 x 11mm straight barrel plug (high retention) - Center Positive		73	2.5 x 5.5 x 9.5mm straight barrel plug (high retention, no spark) - Center Positive	
43	2.5 x 5.5 x 11mm straight barrel plug (high retention) - Center Positive		74	EIAJ#5 style connector - Center Positive	

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