ME90 Family

90W Single Output External Power
Medical Series

Medical

FEATURES AND BENEFITS

- 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
- 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 years warranty
- IP22 rated enclosure

Note: * 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	Overvoltage Trip Level
ME90A1251F01	12.0V	7.50A	90W	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
ME90A1503F01	15.0V	6.00A	90W	150mV pk-pk	±1%	±5%		
ME90A1803F01	18.0V	5.00A	90W	180mV pk-pk	±1%	±5%		
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[2] / 2.5 x 5.5 x 9.5mm Straight Barrel Type, center positive	Class II Desktop, IEC60320 C8 Receptacle
ME90A1503N01	15.0V	6.00A	90W	150mV pk-pk	±1%	±5%		
ME90A1803N01	18.0V	5.00A	90W	180mV pk-pk	±1%	±5%		
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[2] / 2.5 x 5.5 x 9.5mm Straight Barrel Type, center positive	Class II Desktop, IEC60320 C18 Receptacle
ME90A1503Q01	15.0V	6.00A	90W	150mV pk-pk	±1%	±5%		
ME90A1803Q01	18.0V	5.00A	90W	180mV pk-pk	±1%	±5%		
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).

INPUT

AC Input	100-240Vac, ±10%, 47-63Hz, 1Ø
Input Current	115Vac: 2.0A, 230Vac: 1.0A
Inrush Current	264Vac, cold start: will not exceed 60A
Input Fuses	F1, F2: 3.15A, 250Vac fuses (line & neutral lines) provided on all models
Earth Leakage Current (Input to Ground)	<500µA@264Vac, 60Hz, NC <1mA@264Vac, 60Hz, SFC
Efficiency	>88%, typical
No Load Input Power	<0.210W (meets DoE efficiency level VI requirements)

OUTPUT

Hold-Up Time	20mS min., at full Load, 100Vac input
Turn On Time	Less than 1 sec @115Vac, full load
Patient Leakage Current (Output to Earth)	<100μA@264Vac, 60Hz, NC <500μA@264Vac, 60Hz, SFC
Output Power	90W continuous - See models chart for specific voltage model ratings
Output Voltage	See models chart on pg 1
Ripple and Noise	See models chart on pg 1
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, Δi/Δt< 0.2A/μs. Max. voltage deviation is +/-3.5%
Regulation	See models chart on pg 1

PROTECTION

Overtemperature Protection	Will shutdown upon an overtemperature condition, auto-recovery
Overload Protection	130 to 180% of rating, Hiccup Mode
Short Circuit Protection	Hiccup Mode, auto recovery
Overvoltage Protection	130 to 150% of output voltage, hiccup mode
Drop Test	1.4m from table top to wooden platform, 4 faces

ISOLATION SPECIFICATION

Isolation	Input - Output: 2 MOPP Input - Ground: 1 MOPP Output - Ground: 1 MOPP

SAFETY

Safety Standards	EN/IEC/UL60601-1, 3rd edition
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

RELIABILITY

MTBF	>2,50,000 hours, Full load, 110 & 220Vac input, 25°C amb, per Telcordia 332 Issue 6
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 models)

ENVIRONMENT

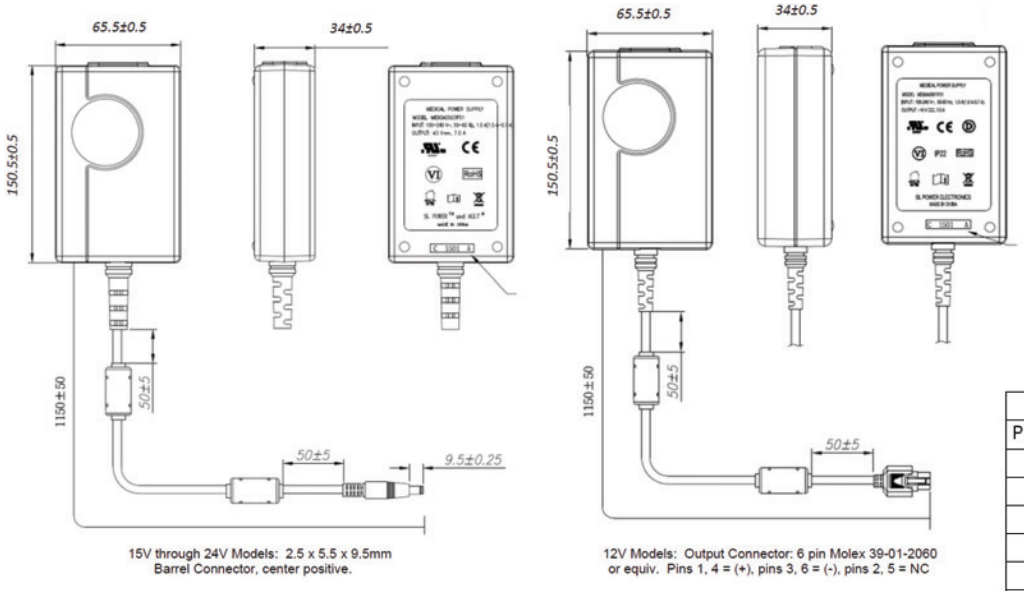
Operating Temperature	-20°C to +50°C. Derate above 40°C Start Up at -40°C, full load, (warmup period before all parameters are within published specifications)
Storage Temperature	-40°C to +85°C
Altitude	Operating: to 5000m. Non-operating: -500 to 40,000 ft
Relative Humidity	5% to 95%, non-condensing
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
Dimensions	W: 2.58" x L: 5.9" x H: 1.34" W: 65.5mm x L: 150.5Mm x H: 34mm
Weight	600g

EMI/EMC COMPLIANCE

Conducted Emissions	IEC60601-1-2/EN55011/CISPR11 Class B, FCC Part 15, Class B, 6db margin typ., at 115 and 230Vac
Radiated Emissions	IEC60601-1-2/EN55011/CISPR11 Class B, FCC Part 15, 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, 4th Edition, Table 4
Radiated RF EM Fields Susceptibility	EN55024/EN61000-4-3, 10V/m, 80MHz-2.7GHz, 80% AM at 1kHz IEC60601-1-2, 4th Edition, Table 4
Electrical Fast Transients (EFT) /Bursts	EN55024/IEC61000-4-4, Level 4, +/- 4kV, 100Khz rep rate, 40A, Criteria A IEC60601-1-2, 4th 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, 4th 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, 4th Edition, Table 5
Rated Power frequency magnetic fields	EN55024/IEC1000-4-8, Level 4: 30A/m, 50/60 Hz IEC60601-1-2, 4th Edition, Table 4
Voltage Interruptions, Dips, Sags & Surges	EN55024/IECEN61000-4-11: --100% dip for 10mS, 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, 4th Edition, Table 5
Harmonic Current Emissions	EN55011/EN61000-3-2, Class A
Flicker Test	EN61000-3-3

Notes : 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.
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.

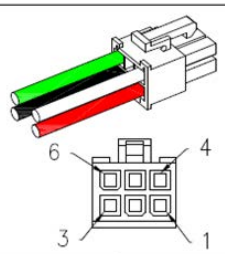
MECHANICAL DRAWING



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

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



Note: Pins 4,5,6 are located closest to the locking tab

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:

Connector No.	Description	Connector No.	Description
02	2.1 x 5.5 x 9.5 mm straight barrel plug - Center Positive 	45	902.5 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 (Pins 8 = (+), pins 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	2.1 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 		

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.