



## ELPAC MSA150 SERIES CLASS I

180 Watt  
Medical Open Frame Power Supply

- Medical Approval – IEC/EN60601-1 Class I 3.1 Edition
- EMC safety - IEC/EN 60601-1-2 4<sup>th</sup> edition
- Low Leakage Current
- High Efficiency: Level V
- Up to 200W with Forced Air
- High Power Density 9.83W/in<sup>3</sup>
- Lifetime Expectation >5 years
- Floating Output
- 5-Year Limited Warranty



INPUT	
Input Voltage	85 – 264VAC (100 – 240VAC Nominal)
Input Frequency	47 – 63Hz (50-60Hz Rated)
Input Current	2.6A-1.1A rms
Inrush Current	<37A at 230VAC cold start
Power Factor	>0.97
Zero Load Power	<0.5W
Earth Leakage Current (Typical)	<200µA @ 132VAC @ 60Hz
	<400µA @ 264VAC @ 60Hz
Touch Leakage Current	<50µA @ 132VAC @ 60Hz
	<100µA @ 264VAC @ 60Hz

OUTPUT	
Output Voltage	See Table
Total Regulation	±5%
Minimum Load	No minimum load required
Start-Up Delay	<1.5s
Hold-Up Time	>20ms at any input voltage of full load
Ripple & Noise	<1% pk-pk **
Over Voltage Protection	110 – 135%
Over Temperature Protection	Active - Recoverable; Passive - Non recoverable
Over Current Protection	120 – 180%
Short Circuit Protection	Shutdown, auto-restart (hiccup mode)

Notes

\*\*Ripple and noise measured with 20MHz bandwidth; 10µF tantalum capacitor in parallel with a 0.1µF ceramic capacitor.

Model Number	Output Voltage	Output Current	Forced Air Current <sup>1</sup>	Total Regulation <sup>2</sup>	Typical Efficiency <sup>3</sup>
MSA150012A	12.0V	15.0A	16.6A	±5%	91.5%/93.5%
MSA150015A	15.0V	12.0A	13.3A	±5%	91.5%/93.5%
MSA150018A	18.0V	10.0A	11.1A	±5%	91.5%/93.5%
MSA150024A	24.0V	7.5A	8.33A	±5%	91.5%/93.5%
MSA150028A	28.0V	6.42A	7.14A	±5%	91.5%/93.5%
MSA150030A	30.0V	6.0A	6.66A	±5%	91.5%/93.5%
MSA150048A	48.0V	3.75A	4.16A	±5%	91.5%/93.5%

Notes

1) Maximum peak load (200W) lasting 500ms with a maximum 10% duty cycle, Sustained output current (200W) with minimum 100 LFM..

2) Includes initial setting, line regulation, load regulation, and thermal drift.

3) Typical Efficiency at Full Load 115/230 VAC.

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**inventus**<sup>TM</sup>  
POWER

## General

Efficiency	Avg. Efficiency 91.5% @ 115VAC; Avg. Efficiency 93.5% @ 230VAC;
MTBF	min. 200,000 hours, SR-332 issue 3
Size	5.00" (127mm) x 3.00" (76.2mm) x 1.22" (30.9mm)
Weight	0.75 LBS (0.34 Kg)
Power Density	9.83W/in <sup>3</sup>
Altitude (Operating/ Non Operating)	5000M / ≥5600M

## Environmental

Operating Temperature	0–70°C (Full load to 50°C, derate linearly to 50% load at 70°C)
Storage Temperature	-40°C to +85°C
Relative Humidity	5-93%, non-condensing
Cooling	Natural Convection (180W) or Forced Air (200W)
Vibration	Unites meet MIL-STD-810G Figure 514.6C-1 category 4

## EMC & Safety

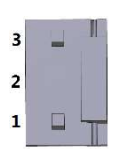
Emissions	IEC/EN60601-1-2(Ed.4) EN61000-3-2, -3
Immunity	EN61000-4-2, -3, -4, -5, -6, -11
Certified by TUV to the following:	cTUVus
	ANSI/AAMI ES60601-1:2005+A2+A1
	CAN/CSA-C22.2 No.60601-1:14
	CB per IEC60601-1 3.1 Edition
	CE marked to LVD and CE EMC /CCC

## Input & Output Configuration

Standard Input Cable	Not Provided, input mating connector: AMP#6402503 or equivalent
Connection on Power Supply Body	AMP#6404453 or equivalent
Standard Output Cable	Not Provided
Output Cable Cord Size	N/A
Output Cable Connector	AMP#6404458 or equivalent
Output Cable Mating Connector	AMP#6402508 or equivalent

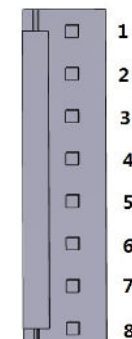
## Input Pin Assignments

Pin 1	AC Neutral
Pin 2	not assembled
Pin 3	AC Line



## Output Pin Assignments

Pin 1	+V1
Pin 2	+V1
Pin 3	+V1
Pin 4	+V1
Pin 5	Return
Pin 6	Return
Pin 7	Return
Pin 8	Return



## Mechanical Drawing

