ICCNEXERGY™
Intelligent Power Solutions



MS40 Series

40W Medical Open Frame Power Supply

- High Efficiency
- Wide Range AC Input
- Fully Regulated DC Output
- Lifetime Expectation >5 years
- Hold-up Time >16ms at full load
- Output Floating
- Safety Approval - EN60601-1 Class I
- RoHs Compliant

Elpac Part Number	Output Voltage	Output Current[1]	Total Regulation[2]	Typical Efficiency[3]
MS4009F	9.0V	4.40A	±5%	84%
MS4012F	12.0V	3.30A	±5%	86%
MS4015F	15.0V	2.70A	±5%	87%
MS4018F	18.0V	2.20A	±5%	86%
MS4024F	24.0V	1.67A	±5%	88%

Notes

1 Maximum peak load (48W) lasting 500ms with a maximum 10% duty cycle.
2 Includes initial setting, line regulation, load regulation, and thermal drift.
3 Typical at 115VAC

Input	
Input Voltage	85 - 264VAC 100 - 240VAC Nominal
Input Frequency	47 - 63Hz
Input Current	<1.0A rms
Inrush Current	<37A at 230VAC cold start
Zero Load Pow er Consumption	<0.5W
Earth Leakage Current (Typical)	<50µA @ 132VAC @ 60Hz
	<75µA @ 264VAC @ 60Hz

Output	
Output Voltage	See Table
Total Regulation	+/-5%
Minimum Load	No minimum load required
Start-Up Delay	<150ms

Hold-Up Time	>16ms
Ripple & Noise	<1% pk-pk ** *
Over Voltage Protection	130-135%
Over Temperature Protection	Active - Recoverable; plus Passive - Non Recoverable
Over Current Protetion	120 - 180%
Short Circuit Protection	shutdow n, auto-restart (hiccup mode)

Notes

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

General

Efficiency	Avg Efficiency 87.3% @ 115VAC; 86.9% @ 230VAC
MTBF	min. 200,000 hours demonstrated
Size	3.0" x 5.0" x 1.1" | 76.2mm x 127.0mm x 27.5mm
Weight	0.40 lbs (0.18 kg)
Pow er Density	2.9W/in3

Environmental

Operating Temperature	0 – 50°C (Full load to 50°C, derate linearly to 50% load at 70°C)
Storage Temperature	-40°C to +85°C
Relative Humidity	5-95%, non-condensing
Cooling	Natural Convection
Vibration	All units production tested to 19.6m/s2

EMC & Safety

Emissions	
Immunity	
Certified by UL to the follow ing:	cRUus
	UL 60601-1
	CAN/CSA-22.2 No.601.1-M90
	CB per IEC60601-1
	CE marked to LVD

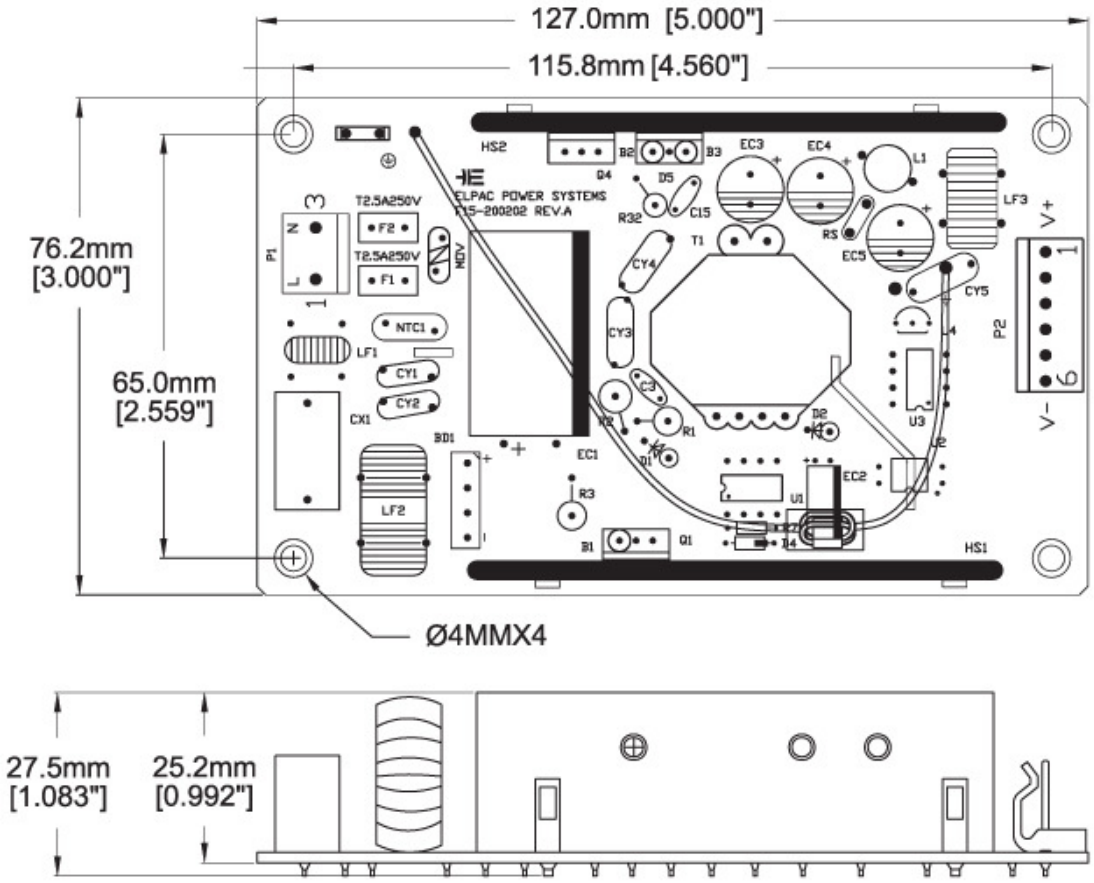
Input Configuration

Connector (P1)	Molex p/n 09-65-2038 or equivalent
Mating Connector	Molex p/n 09-50-1031or equivalent
GND	0.25" Faston Tab

Output Configuration	
Connector (P2)	Molex p/n 09-65-2068 or equivalent
Mating Connector	Molex p/n 09-50-1061or equivalent
Mating Connector Contacts	AMP p/n 3-770476-1or equivalent

Input Pin Assignments (P1)	
Pin 1	AC Line
Pin 2	<not assembled>
Pin 3	AC Neutral

Output Pin Assignments (CN2)	
Pin 1	+V1
Pin 2	+V1
Pin 3	+V1
Pin 4	Com
Pin 5	Com
Pin 6	Com


127.0mm [5.000"]
115.8mm [4.560"]
76.2mm
[3.000"]
65.0mm
[2.559"]
Ø4MMX4
27.5mm
[1.083"]
25.2mm
[0.992"]
ELPAC POWER SYSTEMS
P15-200202 REV.A
T2.5A250V
T2.5A250V
F2
F1
P1
N
L
NTC1
LF1
CY1
CY2
CX1
MOV
BD1
LF2
HS2
B2
B3
D4
D5
R32
C15
EC3
EC4
L1
LF3
RS
EC5
CY4
T1
CY3
CY5
V+
V-
P2
C3
R1
D2
U3
L2
EC1
Q1
EC2
U1
R3
B1
Q1
HS1