

Medical Power Supply

MP360S Series

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360W AC-DC OPEN FRAME



FEATURES

- 250W Convection / 360W Forced-cooled Ratings
- Medical IEC60601-1 & ITE/AV IEC62368-1 Safety Approvals
- Compact size 3"x 5"x 1.2-1.5"
- Suitable for Class I and Class II installations
- High Efficiency up to 95%
- Suitable for Type BF(Class I & Class II) & CF(Class I) Medical Equipment
- Peak Power up to 560W for HP Version



GENERAL DESCRIPTION

The MP360S series is a compact size AC-DC converter with two size options. This 250W (360W with airflow) model meets medical and ITE/AV certified and compatible with Class I & II dual construction. The model has low leakage current and excellent EMI and thermal performance, which makes it perfect for both BF and CF medical devices. The series can be used in multiple applications including ventilator, oxygen concentrator, anesthesia, ECMO, cardiac interventional surgery and etc.

APPLICATIONS



MODELS & RATINGS

MODELS	OUTPUT VOLTAGE	OUTPUT CURRENT		PEAK CURRENT @40mS Max	TOTAL REGULATION	HP VERSION	
		CONVECTION	FORCED AIR			RATED CURRENT	PEAK CURRENT@1S
MP360S-12	12V	18.33A	25.00A	36.5A	±3%	16.66A	42.0A
MP360S-15	15V	15.00A	22.00A	30.0A	±3%	13.33A	35.0A
MP360S-19	19V	13.15A	18.95A	25.0A	±3%	10.52A	28.5A
MP360S-24	24V	10.41A	15.00A	20.0A	±3%	8.33A	23.3A
MP360S-28	28V	8.92A	12.85A	17.15A	±3%	7.14A	20.0A
MP360S-32	32V	7.81A	11.25A	15.0A	±3%	6.25A	17.5A
MP360S-36	36V	6.94A	10.00A	13.3A	±3%	5.55A	15.5A
MP360S-48	48V	5.20A	7.50A	10.0A	±3%	4.17A	11.7A

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NOTES

1). Derate output power by 2% per VAC for input voltage<90vac
2). Ripple & Noise test : use a 0.1uF ceramic capacitor in parallel with a 10 uF electrolytic capacitor at a distance of 15cm from the output connector terminals, the bandwidth is set to 20MHz.
3). The peak current are performed at 100Vac to 264Vac,derated by 2% per VAC for input voltage <100vac, the duty cycle of peak current is 10%Max.
4). Forced air requires 10 CFM.

MODEL ENCODING

MP360S/SE	-	xx/xxx	y	z	-	abcd
OPEN FRAME 360 Watts S: Metal Base SE: Metal Enclosure		OUTPUT VOLTAGE 12: 12V 125: 12.5V 48: 48V	AC input type A: Class I, CF Leakage Blank: Class I and Class II compatible	Leakage(BF or CF Fuse, Connector and Base type Identify		High Peak Version Code or Customer Code or Blank

INPUT ELECTRICAL CHARACTERISTICS

Normal voltage range	100-240VAC
Input Voltage Range	90~264Vac (Universal)
Input Frenquency	47~63Hz
Input Current	4.5A max. at full load condition
Inrush Current	<60A @ 230 VAC, Cold start
Input Protection	Internal T6.3A/250Vac Fuse (Line&Neutral)
Power Factor	0.98 min. @100Vac 60Hz Full load 0.92 min. @230Vac 50Hz Full load

Standby Power	≤0.21W@230Vac/50Hz
Earth Leakage Current(NC)	<250μA @ 264VAC(Class I)
Earth Leakage Current (SFC)	<500μA @ 264VAC(Class I)
Touch Current (NC)	<100μA @ 264VAC(Class I& Class II)
Touch Current (SFC)	<500μA @ 264VAC(Class I& Class II)
Patient Leakage Current	<10uA @ 264VAC, for CF Version Models
No Load Input Power	<0.21W @ 230VAC

OUTPUT ELECTRICAL CHARACTERISTICS

Total Regulation	±3%
Line Regulation	±0.5%
Load Regulation	±2%
Minimum Load	None
Transient Response	±5%, 5%-50% or 50%-100%, 1A/μS

Ripple & Noise	1% pk-pk Max
Turn-On Delay	2 seconds Max @ 100VAC
Hold-Up Time	>20ms @ 100VAC, 250W

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SAFETY & EMC

Safety	IEC60601-1
	IEC62368-1
	CE
	UKCA
EMC	IEC60601-1-2 Edition 4.1
Conduction Emission	EN55011, EN55032, FCC Part J15, Class B
Radiated Emission	EN55011, EN55032, FCC Part J15, Class B
Voltage Fluctuation & Flicker	EN61000-3-3
Harmonic Distortion	EN61000-3-2 Class A
ESD	EN61000-4-2, 8kV contact, 15kV Air Discharge
EFT	EN61000-4-4, Level 3, Criterion A
SURGE	EN61000-4-5 Installation Class 3, Criterion A
DIP ⁽¹⁾	EN61000-4-11
Conducted Immunity	EN61000-4-6, 10Vrms ,Criterion A
Radiated Immunity	EN61000-4-3, 10V/m, Criterion A
Magnetic Fields Immunity	EN61000-4-8, 30A/m, Criterion A

PROTECTION

Over shoot	5%
Over-Voltage	110-140%, Latch off, Recycle input to recovery
Over-Temperature	Auto Recovery with hysteretic
Over-Load	Hiccup, Auto-Recovery
Short Circuit	Hiccup, Auto-Recovery
Over Current Protection	Hiccup, Auto Recovery
Input Brown Out	AC On Voltage ≤80Vac
	AC Off Voltage ≥55Vac
	Minimum Hysteresis 5Vac

POWER OK TIMING

Power OK Delay Time	700ms Max
Power Fail Warning Time	1ms Min

RELIABILITY & ENVIRONMENTAL REQUIREMENTS

Operating Temperature	-20°C to +70°C
Derating	2.5%/°C, > 50°C, up to 70°C max
Storage Temperature	-40°C to +85°C
Operating Humidity	5% to 95% (non-condensing)
Storage Humidity	0 to 100% (non-condensing)
Operating Altitude	5000m
Storage Altitude	5000m
Shock	294m/s ² (30G), 11ms, 6 directions, 3 axis
Vibration	10-500Hz, 19.6m/s ² (2G), 20minutes each along X, Y and Z axis

DIMENSION & PACKING

Efficiency	92%/94% typical@115/230 VAC, Full Load
Isolation	4000 VAC – Input to Output; 2xMOPP
	3000 VAC – Input to Ground; 1xMOPP
	1500 VAC – Output to Ground; 1xMOPP
MTBF	800K Hours, Telecordia SR-332 @ 35 °C
Weight	380~420g ref
Dimensions	76.2x127x30-38mm
	3×5x1.2-1.5"inch

(1) Power supply DIP voltage sag requirements table:

Drop	Time	Criterion	Rated output power
0%Ut	0.5cycle	A	
0%Ut	1cycle	A	
70%Ut	25/30 cycles	B	
0%Ut	300cycles	B	

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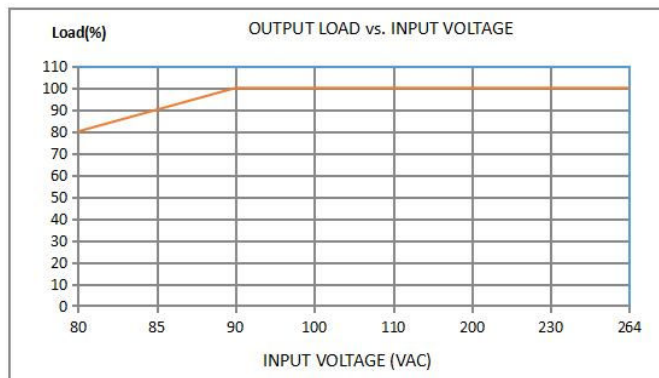
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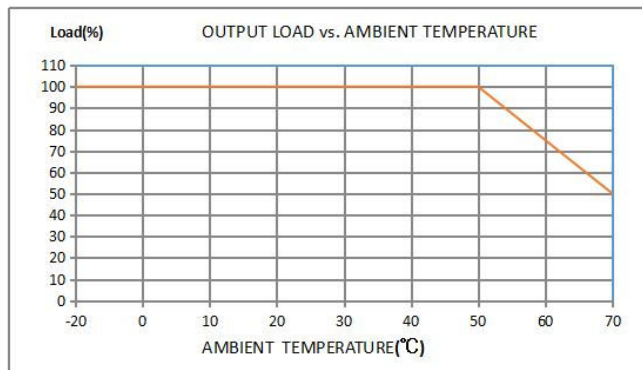
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DERATING CURVE

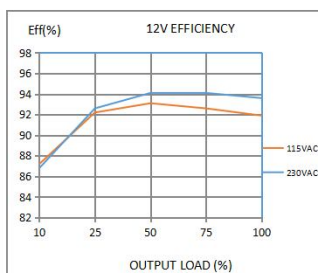
OUTPUT POWER VS INPUT VOLTAGE



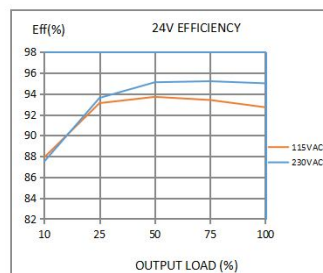
OUTPUT POWER VS AMBIENT TEMPERATURE



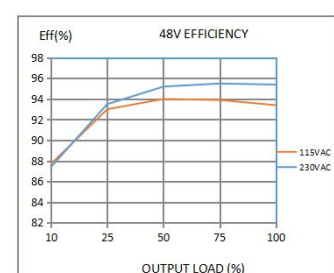
EFFICIENCY



12V Efficiency (Full Load:300W)



24V Efficiency (Full Load:360W)



48V Efficiency (Full Load:360W)

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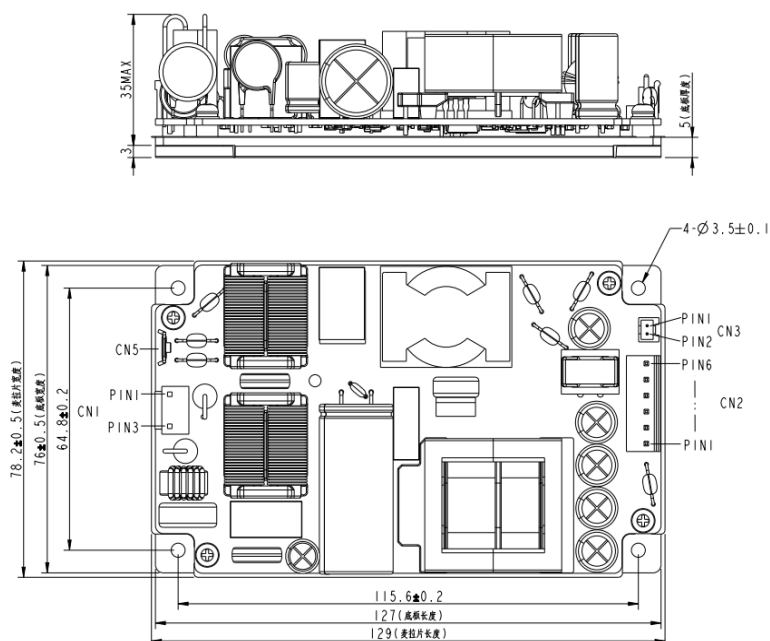
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MECHANICAL AND CONNECTOR INFORMATION

Tooth Plate Type Metal Base

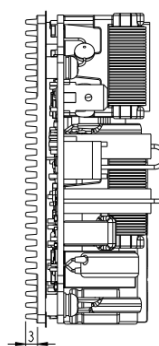


Input Connector CN1 JST(B2P3-VH(LF))	
Pin	Function
1	Line
3	Neutral

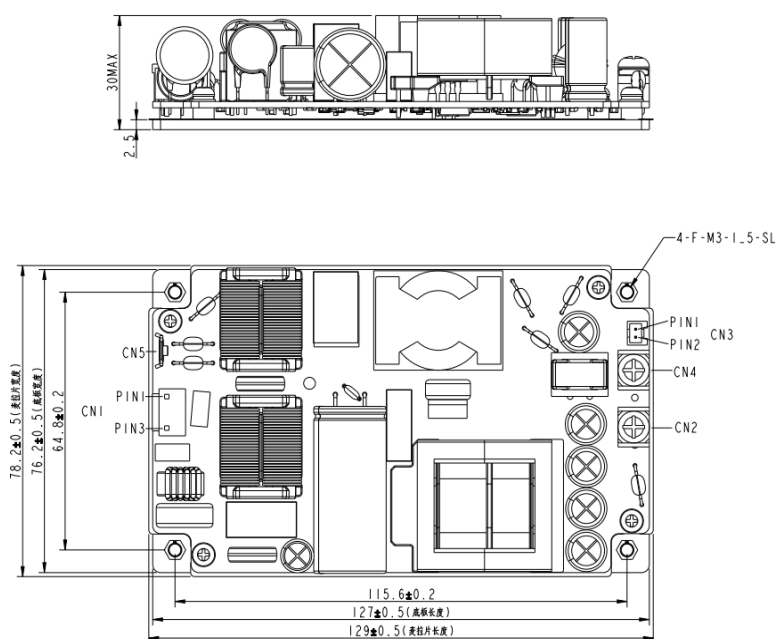
PE Connector CN5 0.25" Faston Gnd Tab	
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DC Output Connector CN2 JST P/N: B6P-VH Mates With: JST VHR-6N	
Pin	Function
1,2,3	+Vout
4,5,6	RTN

DC Output CN3 PHS-2A(HK) (※) /PHS-2A	
Pin	Function
1	Power OK
2	RTN



Plane Plate Type Metal Base

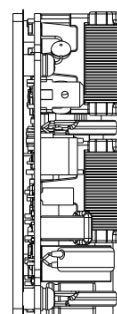


Input Connector CN1 JST(B2P3-VH(LF))	
Pin	Function
1	Line
3	Neutral

PE Connector CN5 0.25" Faston Gnd Tab	
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Output Connector CN2 CN4 Axi(SA-0002-A125) /AXI(ACTB139) /AXI(A0-10/4J-N47)	
Function	
CN2	+Vout
CN4	RTN

DC Output CN3 PHS-2A(HK) (※) /PHS-2A	
Pin	Function
1	Power OK
2	RTN



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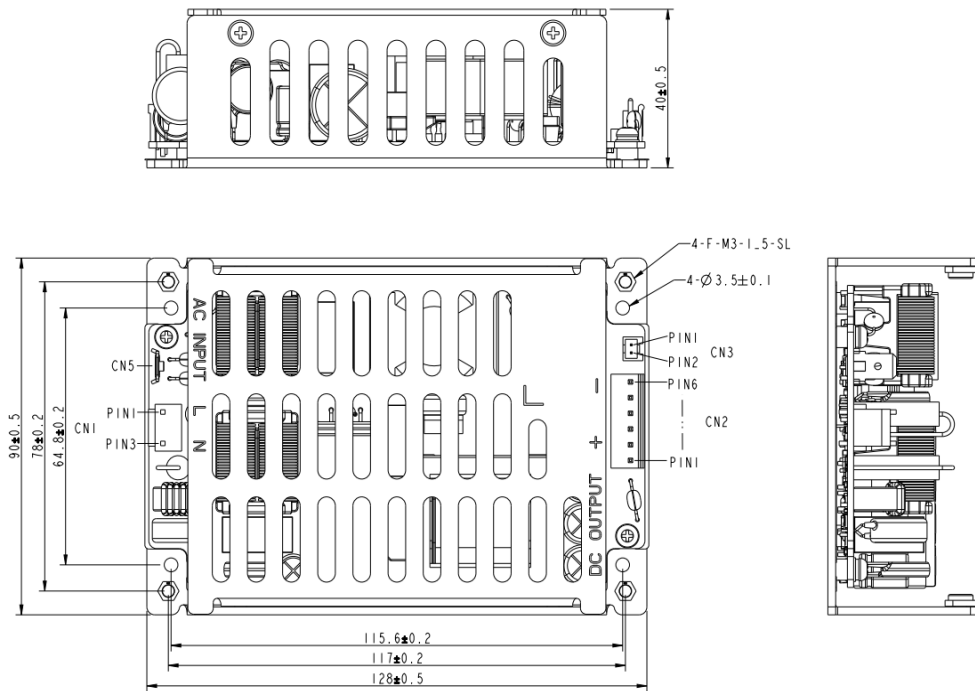
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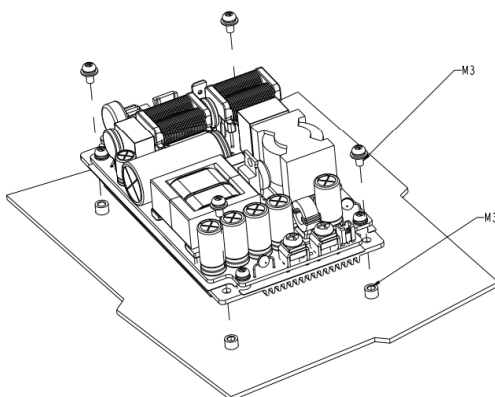
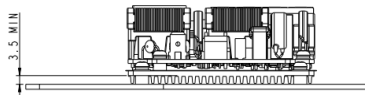
MECHANICAL AND CONNECTOR INFORMATION

Metal Enclosure

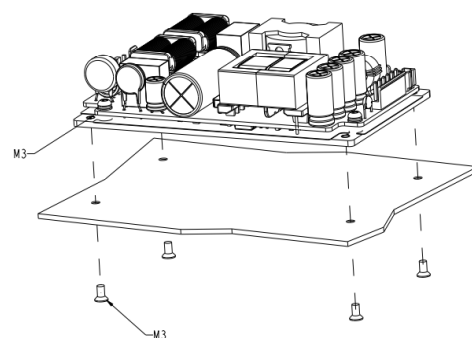
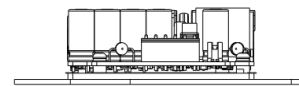


INSTALLATION INSTRUCTION

Tooth Plate Base Installation



Plane Plate Base Installation



Note: The Metal Enclosure is compatible with both installation.

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GLOBAL OPERATION AND SERVICE



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