



SPECIFICATION

For

SWITCHING POWER SUPPLY

M/N: MPM-U305

Revision Index

REV.	Feb. 20 th 2009	Update derating curves.
REV	Mar. Sec 2009	Adding note(6) at the section of description. Update description of output efficiency and derating curves.
REV.	Mar. 16 th 2009	Update mechanical dimension (Height).
REV.	Apr. 6 th 2009	Update Max. output value and derating curves. Adding fan pin assignment and mechanical draws in section 7.
REV.	Jul. 15 th 2009	Update the information of Safety Approvals in section 6. Adding description of two optional requirements in section 8.
REV.	Aug. 19 th 2009	Update the photograph of power supply. Adding the voltage of fan at section 7.
REV.	Oct. 22 nd 2009	Correcting descriptions and revising the derating curves.
REV.	Dec. 16 th 2009	Cancel the no minimum load version.
REV.	Feb. 10 th 2010	Update derating curves and adding mechanical drawing with cover provided.
REV.	Mar. 15 th 2010	Adding the drawing and spec of screws for fix bottom enclosure.
REV.	May. 6 th 2010	Revising the max. output power of 19V.
REV.	Aug. 20 th 2010	UL 60601-1 1 st edition approved.



BF direct patient contact rated



CB



UL US

FEATURES

- 300W convection cooling and 360W forced air cooling single output medical power supply
- Active PFC meets Class D EN 61000-3-2 and EN 61000-3-3
- Conducted EMI meets CISPR/FCC Class B.
- High Efficiency up to 91%.
- Adjustable output range.
- Design to meet medical standard IEC 60601-1, EN 60601-1, UL 60601-1 type BF rated

1. Description

MPM-U305 is a fan-less 300W, U-frame, switching power supply with PFC function for medical application.

Model Number	Output Voltage range ^(Note 1)	Min. Output Current	Rated Output Power	Max. Output Power ^(Note 5)	Total Regulation ^(Note 2)	Ripple & Noise p-p ^(Note 3)	Initial Setting Accuracy ^(Note 4)
MPM-U305	+19-28V / 24V	0A	300W	360W ^(Note 5)	±2%	±1%	1%

Total Output Power: total maximum power is rated 300W, peak 360W max. 5 seconds with convection cooling; max. 360W continuously with 23.3CFM forced air cooling at 50°C environment temperature.

- Note: 1) Output voltage can be adjusted by variable resistor with nominal 24V which would be adjusted at factory.
 2) Total regulation is measured a setting output voltage. Input voltage is from 90-264VAC and output from 0W to 360W.
 3) Measured by a 20MHz bandwidth limited oscilloscope and the each output is connected with a 10µF Electrolytic Capacitor and a 0.1µF Ceramic Capacitor.
 4) Voltage setting is at 60% rated load and 25°C.
 5) The max output power should not over than 360W. The max output power at 19V output is 350W.

2. Input Specification

Parameter	Conditions/Description	Min.	Nom.	Max.	Units
Input Voltage	Continuous input range	90	115/230	264	VAC
Input Frequency	AC input.	47	50/60	63	Hz
Hold Up Time		16			ms
Inrush Current				60	A

3. Output Specification

Parameter	Conditions/Description	Min.	Nom.	Max.	Units
Efficiency	AC 230V input, rated load, 24V output			91	%
Minimum load				See Chart of Description	
Ripple & Noise	Rated load, 20MHz bandwidth			240	mV
Total Regulation	On condition of a setting output voltage, input voltage from 90-264VAC and output from 0W to 360W.			See Chart of Description	

4. Interface Signals and Internal Protection

Parameter	Conditions/Description
Remote Voltage sense	Compensates for wire voltage drop.
Short Circuit Protection	Fully protected against output overload and short circuit. Automatic recovery upon of overload condition.
Over Voltage Protection	For some reason the power supply fails to control itself, the build-in over voltage protection circuit will shut down the outputs to prevent damaging external circuits. The trigger point is between 29.7-32.9V.
Over Temperature Protection	When the power supply operating over the temperature or over load limit, the power supply will be shut down automatically to protect itself.



5. Part number coding

MPM-U30 X - W

Output voltage

X = 5: +24Vdc
X = 5-1: +28Vdc

Option

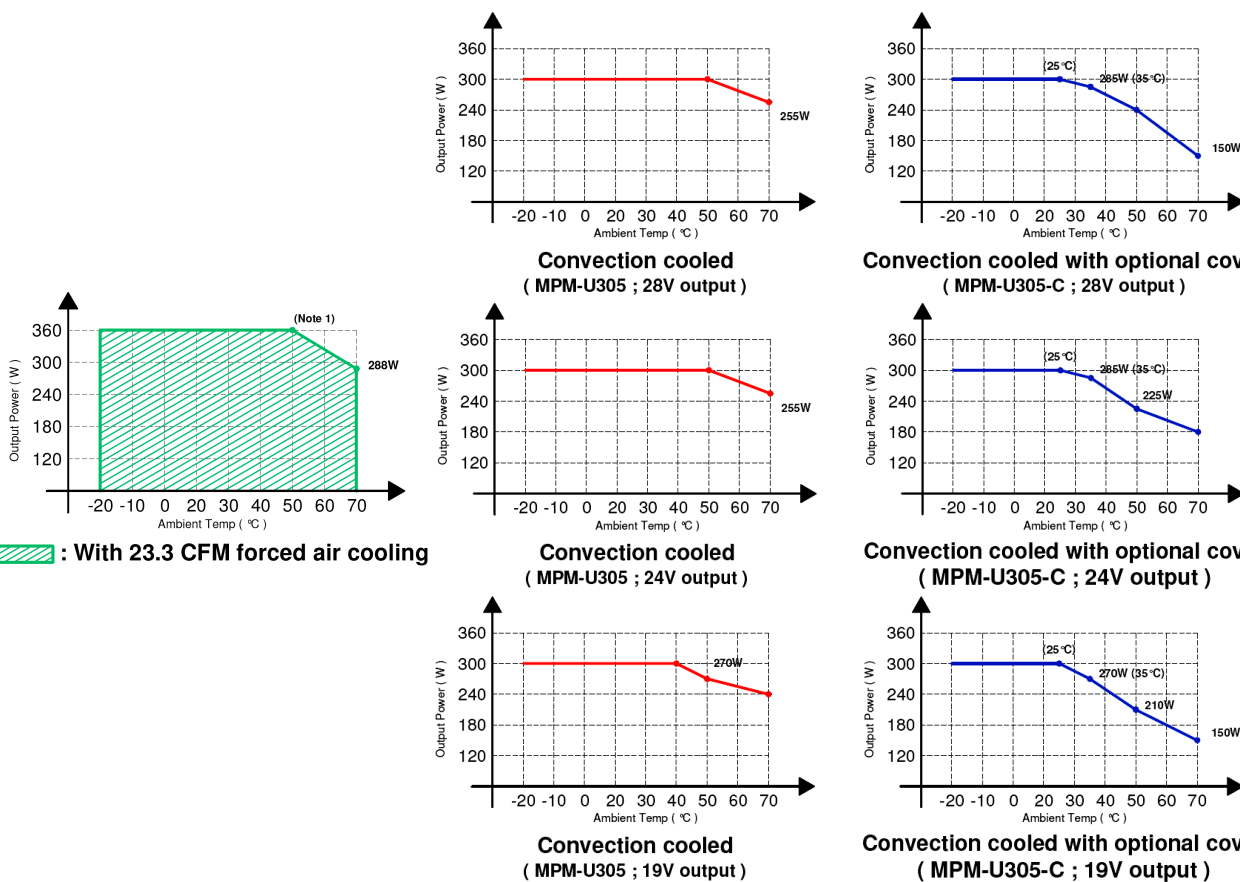
W = C: with cover assembled.
W = D: voltage dips criteria A complies.
W = E: with European terminal blocks both input CN1 and output CN2.
W = S: with direction reverse protection available in two pieces serial connection application.

[Confirm availability of P/N with Magic Power.](#)

6. Environment Specification

Parameter	Conditions/Description	Min.	Nom.	Max.	Units
Storage Temperature		-20		+85	°C
Relative Humidity	Non-condensing.	5		95	%RH
Altitude	Operating Non-operating			2K 4K	Meter
Operating Temperature	Derate above 50°C to a maximum temperature of 70°C as curves below:	-20		+50 +70	°C

Derating curves



Note: 1) Max. output power at 19V output is 350W.



7. Safety Approvals, EMI and EMS Specification

Parameter	Conditions/Description	Min.	Nom.	Max.	Units	
Approvals	UL, UL 60601-1				1 st edition	
	CB, IEC 60601-1: 2005				3 rd edition	
	TUV, EN 60601-1: 2006				3 rd edition	
Leakage Current	Patient Leakage Current at 264Vac, 63Hz normal condition	BF			Type	
	(Primary to Earth GND)			150	uA	
	(Secondary to Earth GND)			100	uA	
EMI ^(Note 1)	EN 60601-1-2: 2001	B			Class	
	EN 55011 / EN 55022	B				
PFC	EN 61000-3-2: 2000 & EN 610003-3: 2001	D				
EMS	IEC 61000-4-2: 2001, 8KV air discharge, 6KV contact discharge	A			Criteria	
	IEC 61000-4-3: 2002, 10V/m	A				
	IEC 61000-4-4: 2004, 2KV line & PE	A				
	IEC 61000-4-5: 2001, 1KV line to line, 2KV line to PE	A				
	IEC 61000-4-6: 2004, 10V/m	A				
	IEC 61000-4-8: 2001, 3A/m	A				
	IEC 61000-4-11: 2004, Voltage dips >95%, 0.5 cycle	A				
		Voltage dips 30%, 25 cycles	A			
	Voltage dips 60%, 5 cycles	A-B*				
	Voltage interruptions >95%, 250 cycles	B				

* Criteria A option by request separately, find section 9 for detail.

Note: 1) As a build-in type power supply, the power supply needs to be installed in a suitable enclosure to pass the EMI/EMC tests. The final assembly has to comply with the valid EMI/EMC and safety.

8. Mechanical

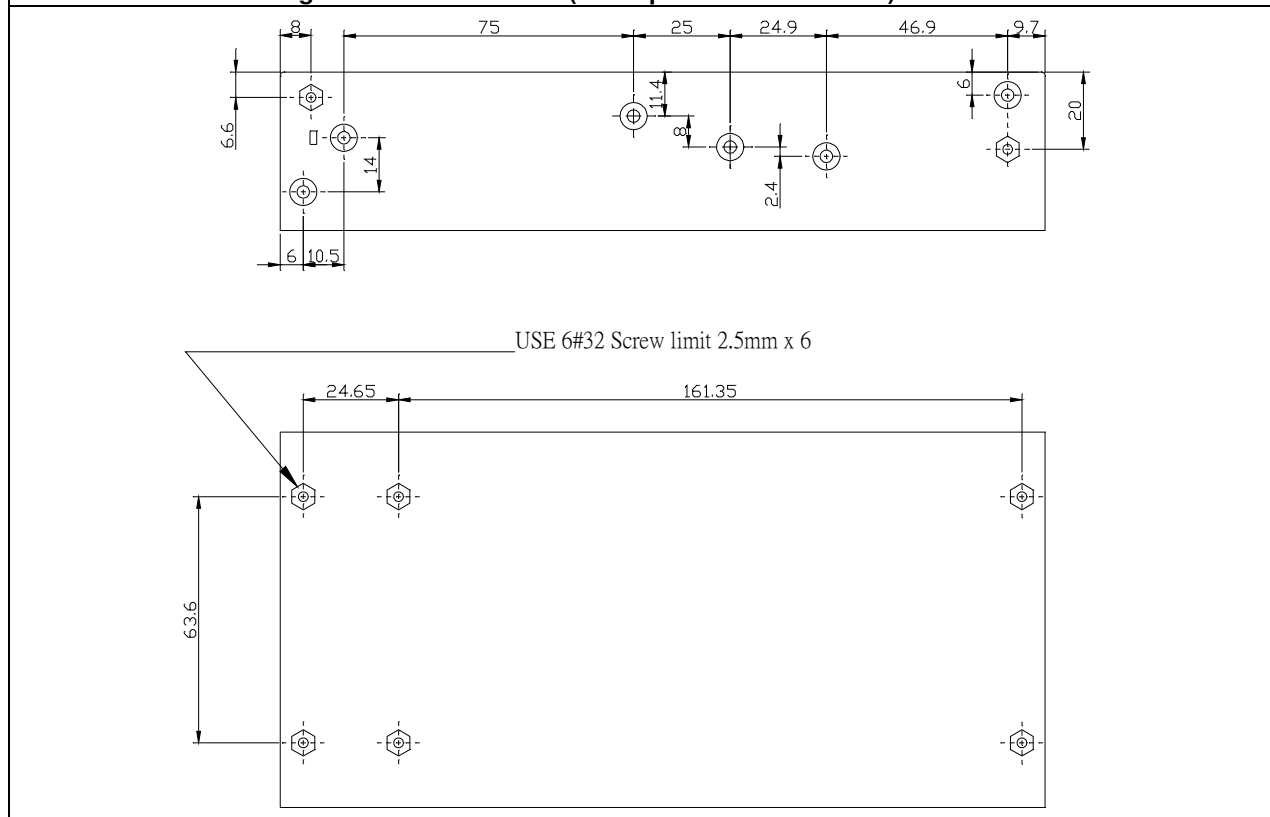
Parameter	Conditions/Description
Dimension	198 (L) x 97 (W) mm, tolerance +/- 0.4mm, with (H) 41 mm, tolerance +0/-0.5 mm.
Connector	CN1 --- AC input: 3 Positions Terminal Blocks, European type by request.
	CN2 --- DC output: 4 Positions Terminal Blocks, European type by request.
	CN3 --- Output remote sense: 2 Positions
Pin Assignment	CN1 Pin 1. L 2. N 3.GND
	CN2 Pin 1. V+ 2. V+ 3. V- 4. V-
	CN3 Pin 1. Remote Sense + 2. Remote Sense -
	FAN ^(Note 1) Pin 1. V+ 2. V-

Note: 1) The voltage of fan is the same with the output voltage of power supply.

※The mechanical drawing is on next page.



The mechanical drawing of bottom enclosure (and spec of fixed screws):



9. Option

** Please contact us for the availability and pricing*

Parameter	Conditions/Description
Cover (P/N 831-U30U)	Order part number with suffix code “-C”, with cover assembled.
European terminal block appliance	Order part number with suffix code “-E”, with European terminal blocks both input CN1 and output CN2.
DIP criteria A (for MPM-U305 only)	Additional storage electronic capacitors provided to comply with criteria A of voltage dips at 100Vac input. Order part number MPM-U305-D.
Available for two pieces in serial connection	Order part number with suffix code “-S”, with direction reverse protection available in two pieces serial connection application.
Redundant module (P/N 900-RD30)	Additional module available by request separately for redundant function.
UPS charger module	Additional module available by request separately for UPS charger function.
Multi outputs module	Additional module available by request separately for multi outputs.