SPECIFICATION

For

SWITCHING POWER SUPPLY

M/N: MPD-F113-V

Revision History

Version	Revise Date	Change Items
Rev. 01	Oct. 1. 2012	Established.
Rev. 02	Dec. 6. 2012	Revised EMS performance and added mechanical drawing.
Rev. 03	Jun. 4. 2013	Added recommended torque of input connector.
Rev. 04	Nov. 25. 2015	1. Added "or equivalent" after "Molex". 2. Added vibration test. 2. Changed Molex Proposed Terminals from 5176 to 5167.
Rev. 05	Dec. 25. 2017	1. Changed form. 2. Added EN 55032.
Rev. 06	Jun. 28. 2018	Changed mechanical diagram.
Rev. 07	Dec. 24. 2018	Added output current to output field.

MPD-F113-V

110W DC / DC

FEATURES

- ✓ 110W isolated DC/DC converter with 11.7 CFM forced air-cooling, 90W convection cooled.
- ✓ Fully isolated Primary to Secondary; Primary to Earth Ground.
- ✓ Wide DC input range 30-120VDC.
- ✓ Design to meet EN 50155.
- ✓ Input polarity reversed protection.
- ✓ Compact size 2 x 5 inch.
- ✓ Low inrush current to prevent power adapter turn on issue.
- ✓ High efficiency up to 90%.

Models & Ratings

Model Number	Wattage (Rated / Max)	Output Voltage	Min. Current	Rated Current	Max. Current
MPD-F113-V	90 W / 110 W	+12 V	0 A	7.5 A	9.17 A(Note.1)
		Fan supply(+12 V)	0 A	0.3 A	0.3 A

Total Output Power: Max. 90W with convection cooled at 50˚C environment temperature; max. 110W with 11.7 CFM max. at 70˚C environment temperature.

Note:
1. When output current above 7.5A, it has to force air cooling 11.7 CFM.
2. Please see the performance curves for the detail.

Summary

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Range	30	48	120	VDC	Continuous input range.
	28		140		Endured max. 1 sec. for input voltage dips.
Efficiency		90		%	Nominal DC Input Voltage, rated load.
Operation Temperature	-10		+70	˚C	Derate linearly above 50°C by 0.6% per °C to a maximum temperature of 70°C at 88% load.
Weight		183.5		g	
Dimensions	51.0 (L) x 127.0 (W) x 31.5 (H) mm, Tolerance +/- 0.5mm.				
EMC	EN 55022 / EN 55032, CISPR 32 & FCC Part 15, EN 50121-3-2 IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6				
Safety Approvals	IEC 60950-1, 2nd Edition, EN 60950-1, 2nd Edition, UL 60950-1, 2nd Edition, CSA C22.2 No.60950-1-07, 2nd Edition, IEC 60571, EN 50155				

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage	30	48	120	VDC	Continuous input range.
	28		140		Endured max. 1 sec. for input voltage dips.
Input Current			5	A	Nominal DC Input Voltage, rated load.
Inrush Current			10	A	Nominal DC Input Voltage, rated load, cold start at 25°C.
Input Reverse Polarity Protection	When incorrect input polarity installation, the PSU will be not damaged and no output voltage.				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage		12		VDC	
Output Current		7.5	9.17	A	
Initial Set Accuracy	11.76		12.24	V	At factory, all outputs in 60% rated load. The +12V output is set to between 11.76V and 12.24V.
Minimum Load		0		A	
Line Regulation		±0.5		%	Less than ±1% at rated load with ±10% changing in nominal DC input voltage.
Load Regulation		±0.5		%	Measured from 60% to 100% rated load and from 60% to 20% rated load (60%±40% rated load) for each output, and others voltage setting at 60%.
Ripple & Noise		60		mV	Measured at rated load by a 20MHz bandwidth limited oscilloscope and the each output is connected with a 10μF Electrolytic capacitor and a 0.1μF Ceramic Capacitor.
Overvoltage 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 from 12.8V to 15V.				
Short Circuit or Over Load Protection	The power supply will go into hiccup mode against short circuit or over load conditions, and will auto-recovery while fault conditions moved.				

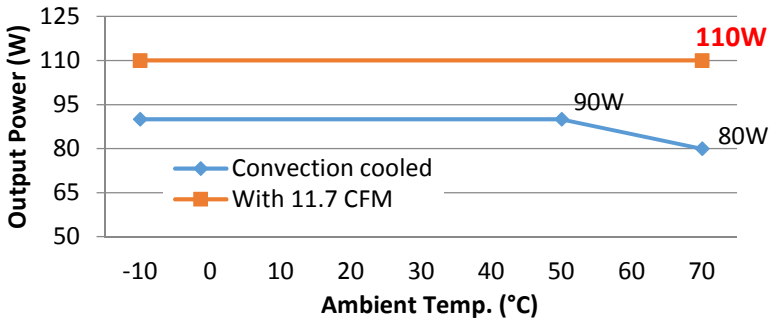
General

Characteristic		Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency			90		%	Nominal DC Input Voltage, rated load.
Isolation	IP to OP			1500	VAC	
Switching Frequency			65		KHZ	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-10		+70	˚C	Derate linearly above 50°C by 0.6% per °C to a maximum temperature of 70°C at 88% load.
Storage Temperature	-20		+75	°C	
Relative Humidity	10		90	%RH	Non-condensing.
Cooling	11.7			CFM	Forced-cooled > 90W
Operating Altitude		2000		m	
Vibration	0.26		6.09	G	Frequency Type: Sweep Frequency Frequency Range: 10~55 Hz Displacement: 1.0mm Sweep Rate: 60 minute / cycle Number of cycle: 1 cycle / axis Direction: X ,Y and Z axis

Derating curve



Performance curves of MPD-F113-V

EMC: Emissions

Phenomenon	Standard	Class	Notes & Conditions
Conducted	EN 55022 / EN 55032 CISPR 32 & FCC Part 15	A	
Radiated	EN 55022/ EN 55032 CISPR 32 & FCC Part 15	A	

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.
2. With Class B radiation is required an additional filter circuit, please contact us for detail. MAGIC POWER also provide the circuit as a module, please feel free to contact us if has any request.

EMC: Immunity

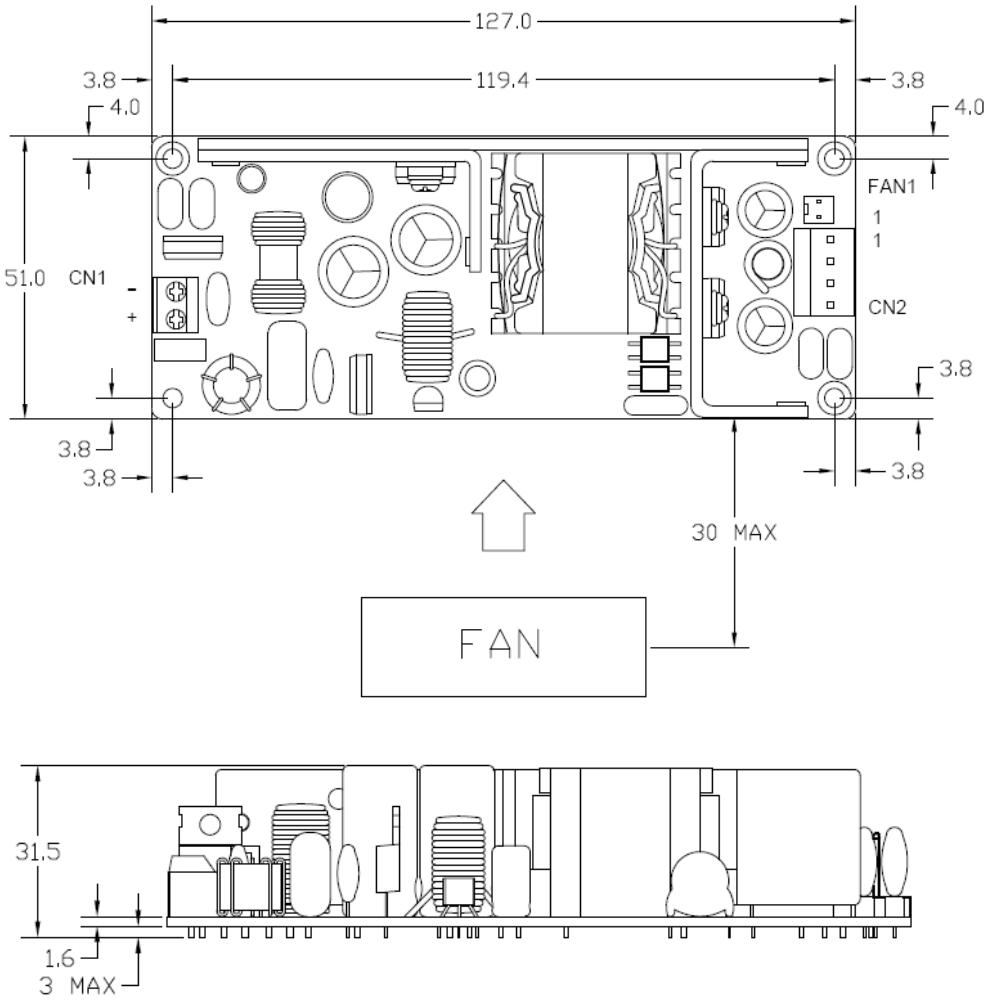
Phenomenon	Standard	Criteria	Notes & Conditions
ESD	IEC 61000-4-2	A	±8KV air discharge, ±6KV contact discharge
Radiated	IEC 61000-4-3	A	10V/m
EFT	IEC 61000-4-4	A	±2KV Line & PE
Surges	IEC 61000-4-5	A	±1KV line to line, ±2KV line to PE
Conducted	IEC 61000-4-6	A	10V/m

Safety Approvals

Safety Agency	Safety Standard	Notes & Conditions
TUV	EN 60950-1, 2nd Edition, EN 50155	Design to meet.
CB	IEC 60950-1, 2nd Edition, IEC 60571	Design to meet.
UL/cUL	UL 60950-1, 2nd Edition CSA C22.2 No.60950-1-07, 2nd Edition	Design to meet.

Mechanical Details

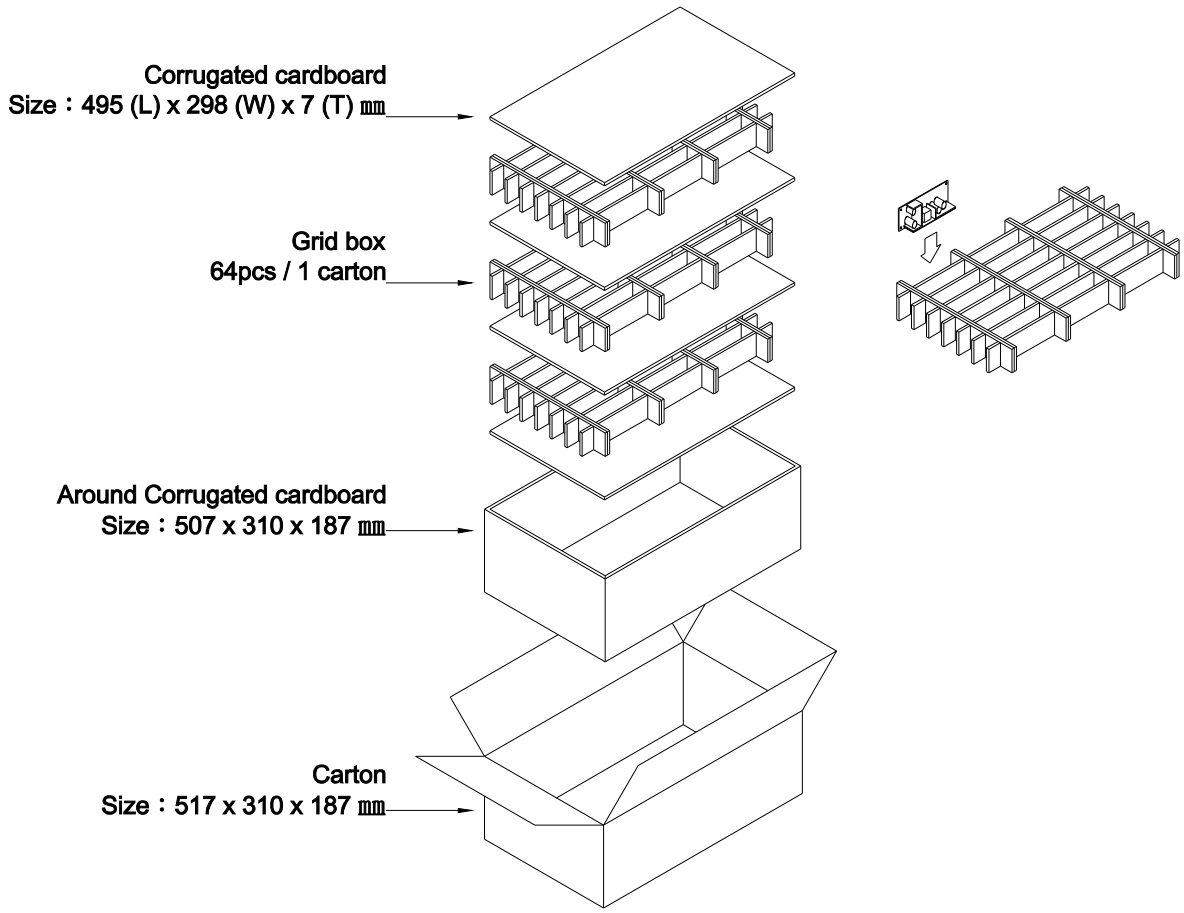
SIZE：51.0(L) x 127.0(W) x 31.5(H)mm, Tolerance +/-0.5mm.



Note: Requested for output power more than 90W.

Parameter	Conditions/Description				
Dimension	51 (L) x 127 (W) x 31.5 (H) mm, Tolerance +/- 0.5mm.				
Connector & Pin Assignment	Location	Pin	Assignment	Proposed Housing	Proposed Terminals
	CN1 (Input)	1	Vin (+)	N / A	24~14 AWG (With max. torque=0.4N*m)
		2	Vin (-)		
	CN2 (Output)	1	+ V	MOLEX: 09-05-1041 (5195-04) or 09-52-4044 (5239-04) or equivalent	MOLEX: 5194 or 5225 2478, 2578,5167 or 5168 or equivalent
		2	+ V		
		3	0 V		
		4	0 V		
	CN3 (Option)	1	+ V	MOLEX: 22-01-1022 (5051-02) or 51191-0200 or equivalent	MOLEX: 2759 or 5159 or 50802 or equivalent
		2	0 V		

Packing info



Thermal Considerations

In order to ensure safe operation of the PSU in the end-use equipment, the temperature of the components listed in the table below must not be exceeded.
Temperature should be monitored using J type thermocouples placed on the hottest part of the component (out of any direct air flow). See Mechanical Details for component locations.

Temperature Measurements at max. amb.	
Component	Max Temperature
T1	110℃
Q2	120℃
D5	120℃
C2	105℃
C21	105℃