



SPECIFICATION

For

SWITCHING POWER SUPPLY

M/N: MPE-S040 Series

Revision history

REV.	Jan. 7 th 2013	Established.
REV.	Sep. 23 rd 2013	a) Remove Power factor b) Inrush current from 30A to 40A c) Remove over/under shoot d) -40 degree C start up change to 80% rated load when input below 100VAC e) Initial voltage setting from $\pm 1\%$ to $\pm 2\%$
REV.	May 29 th 2014	Add 7 CFM at 70 degree C for 40W
REV.	Jun. 13 th 2014	Add Mechanical drawing , Packing Info & Cover option; Delete EN61204-3 in EMI
REV.	Dec. 26 th 2014	Change mechanical drawing.
REV.	Mar. 5 th 2015	Change mechanical drawing for adding size of screw holes.
REV.	April 8 th 2015	Added class II, UL and CE logo
REV.	Nov. 6 th 2015	Change mechanical drawing.
REV.	Jan. 7 th 2016	a) Changed 115VAC Minimum Efficiency from 86% to 85%. b) Added "or equivalent" after "Molex" and "JST" c) Changed Molex Proposed Terminals from 5176 to 5167



FEATURES

- 40W convection-cooled @ 50°C ambient
- Wide operating temperature -20~70°C
- Compact size 2" x 3" with low profile 1"
- High efficiency up to 90%
- No-load power consumption < 0.3W
- Low inrush current
- Class II, also class I with optional functional ground connected
- Design to meet ITE standard IEC, EN, UL 60950-1 2nd Edition
- Meets EMI CISPR 22 / FCC Part 15 class B

1. Description

Model No.	Output Voltage	Mini. Output Current	Rated Output Current	Peak Output Current (Note 4)	Line Regulation (Note 1)	Load Regulation (Note 1)	Ripple & Noise p-p (Note 1)	Initial Setting Accuracy (Note 2)
MPE-S043	+12V	0 A	3.4 A	4.4 A	±1%	±1%	±1%	±2%
MPE-S045	+24V	0 A	1.7 A	2.2 A	±1%	±1%	±1%	±2%
MPE-S046	+48V	0 A	0.85 A	1.1 A	±1%	±1%	±1%	±2%

Total Output Power: Max. 40W with convection cooled at 50°C environment temperature, with 7 CFM at 70°C environment temperature (Note 3).

- Note: 1) Please refer to paragraph 3 for detail notes & conditions.
 2) Initial setting accuracy is at Input 115VAC and output at 60% rated load.
 3) Air flow from top-center of PSU with distance 50 mm maximum.
 4) Peak current lasting < 15sec. with a maximum 10% duty cycle. Its average output power must not exceed nominal.

2. Input Specification

Parameter	Conditions/Description	Min.	Nom.	Max.	Units
Input Voltage	Continuous input range.	85	115 / 230	264	VAC
		130		370	VDC ^(Note 1)
Input Frequency	At AC input.	47	50 / 60	63	Hz
Input Current	Nominal AC Input Voltage (115/230VAC), rated load.			1.5 / 0.8	A
Inrush Current	Nominal AC Input Voltage (115/230VAC), one cycle at 25°C cold start.			40	A
Input Protect	Non-user serviceable internally located AC input line fuse				
No-load Power Consumption	Nominal AC Input Voltage (230VAC)			0.3	W
Earth Leakage Current	At input 264VAC, 63Hz, rated load			0.25	mA

Note: 1) only for electrical function. In safety approvals, it is considered and applied AC input version.

3. Output Specification

Parameter	Conditions/Description	Min.	Nom.	Max.	Units
Output Voltage			See Chart of Description		
Output Power	Nominal AC Input Voltage (115/230VAC).		See Chart of Description		
Initial Setting Accuracy			See Chart of Description		
Turn-on Delay	Time required for initial output voltage stabilization.		1	3.5	Sec
Hold Up Time	Nominal AC Input Voltage (115/230VAC), rated load.	12			ms
Efficiency	Nominal AC Input Voltage (115/230VAC), rated	85 / 87		91	%



load. ^(Note 1)

Minimum load		See Chart of Description
Ripple & Noise	Rated load, measured by a 20MHz bandwidth limited oscilloscope and the each output is connected with a 10µF Electrolytic Capacitor and a 0.1µF Ceramic Capacitor.	See Chart of Description
Line Regulation	Less than ±1% at rated load with ±10% changing in input voltage 115VAC.	See Chart of Description
Load Regulation	Measured from 60% to 100% rated load and from 60% to 20% rated load (60% ±40% rated load).	See Chart of Description

Note: 1) Measured after warm-up above 1 hr.

4. Interface Signals and Internal Protection

Parameter	Conditions/Description
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 auto recovery the outputs to prevent damaging external circuits, the trigger point is around 110%~140% of output voltage.

5. Model no. coding

M P E - S 0 4 X - Y

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X =	Output (V)
3	+12
5	+24
6	+48

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Y=	Input / Output Connector Type
blank	Molex Type Connector or equivalent (Standard Product)
J	JST Type Connector or equivalent

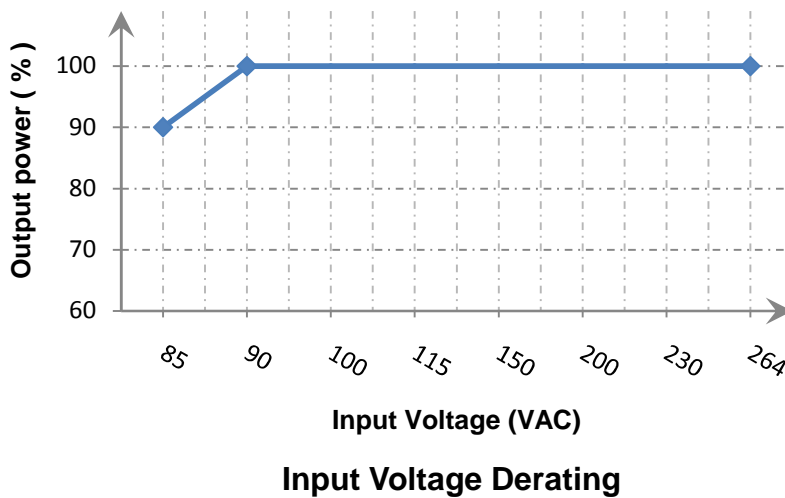
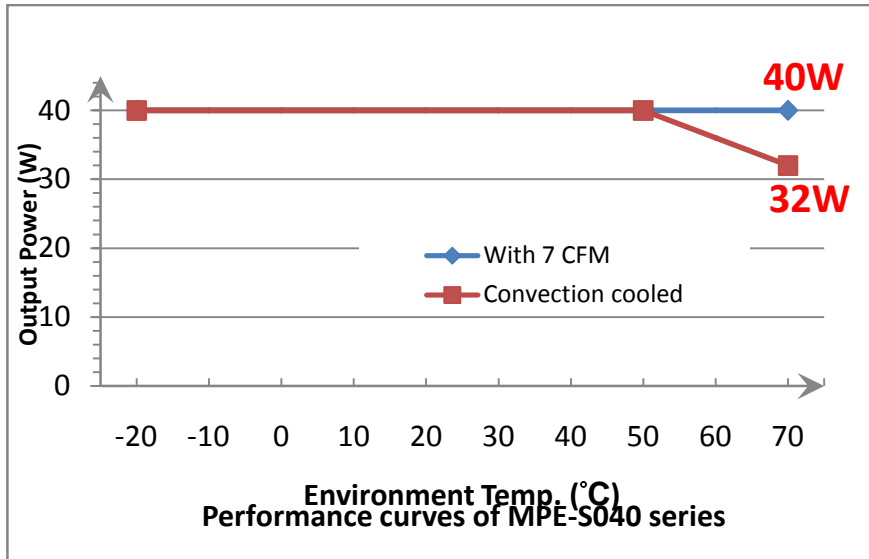
6. Environment Specification

Parameter	Conditions/Description	Min.	Nom.	Max.	Units
Operating Temperature	Please refer to the performance curves as following.	-20		+70	°C
Start-up Temperature	Without specification stabled ^(Note 1) .	-40			°C
Storage Temperature		-40		+85	°C
Relative Humidity	Non-condensing.	5		95	%RH
Altitude	Operating Non-operating			3K 4K	Meter

Note: 1) Specification stabilized within 20 minutes. When input voltage is below 100VAC, the it should be derated 80% rated load.



Performance curves



7. Safety Approvals, EMI and EMS Specification

Parameter	Conditions/Description	Min.	Nom.	Max.	Units
Approvals	CB : IEC 60950-1, 2 nd edition UL : UL 60950-1, 2nd Edition cUL : CSA C22.2 No. 60950-1-07, 2nd Edition		Approved		
Dielectric Withstand	Input to Output Input to FG	3000 1500			VAC
Insulation Resistance	Input to Output Input to FG Output to FG	100			MΩ
EMI ^(Note 1-3)	EN 55022 / CISPR 22 & FCC Part 15 EN 61000-3-2 EN 61000-3-3	B A			Class
EMS ^(Note 1, 3)	IEC 61000-4-2 ±8KV air discharge, ±6KV contact discharge IEC 61000-4-3 10V/m IEC 61000-4-4 ±2KV Line & PE IEC 61000-4-5 L-N:±1KV, L/N-PE:±2KV IEC 61000-4-6 10Vrms	A A A A A			Criteria



IEC 61000-4-8	10A/m	A
IEC 61000-4-11	Voltage dips >95%, 0.5 cycle	A
	Voltage dips 30%, 25 cycles	A / B (Note. 4)
	Voltage dips 60%, 5 cycles	A / B (Note. 4)
	Voltage interruptions >95%, 250 cycles	C

- 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) The mounting holes shall be connected to each other for EMI purpose.
 3) The EMC test conditions are applied for AC input voltage only.
 4) The test result of input 240Vac / 100Vac is criteria A / B.

8. Mechanical Specification

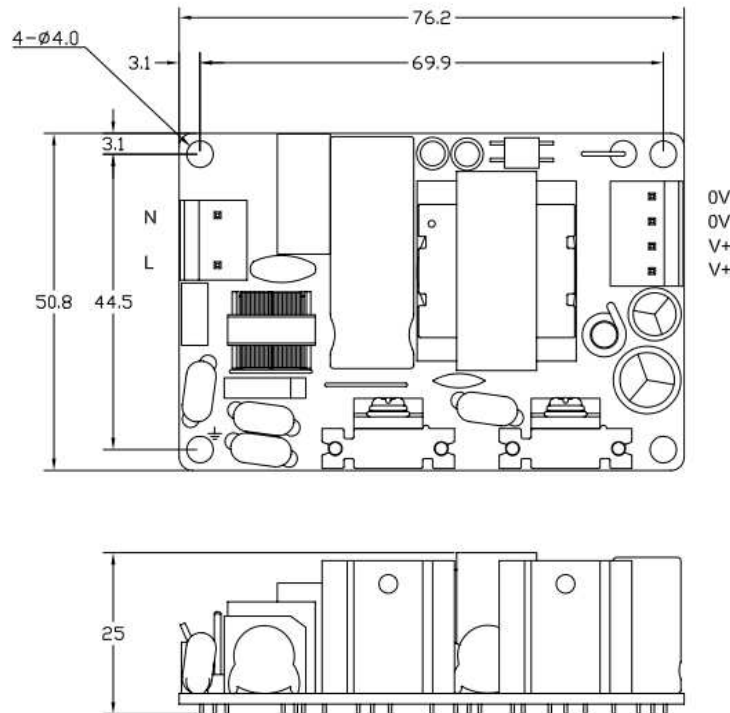
Parameter Conditions/Description

Dimension	76.2 (L) x 50.8 (W) x 25 (H) mm, Tolerance +/- 0.5mm.					
Connector & Pin Assignment	Location	Pin	Assignment	Proposed Housing	Proposed Terminals	
CN1 (Input)		MX 1	JT 3	AC in (N)	MOLEX: 09-05-1031 (5195-03) or 09-52-4034 (5239-03) or equivalent	MOLEX: 5194 or 5225 2478, 2578, 5167 or 5168 or equivalent
		MX 2	JT 2	N / A		
		MX 3	JT 1	AC in (L)	JST: VHR-3N or equivalent (Note 1)	JST: SVH-21T-P1.1 or equivalent (Note 1)
CN2 (Output)		MX 1	JT 4	+ 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
		MX 2	JT 3	+ V		
		MX 3	JT 2	0 V	JST: VHR-4N or equivalent (Note 1)	JST: SVH-21T-P1.1 or equivalent (Note 1)
		MX 4	JT 1	0 V		

Note: 1) Exist with model no. suffixed -J, please see the detail in paragraph 5.

Note: 2) The pin assignment "MX" for Molex type connector or equivalent, "JT" for JST type connector or equivalent.

Mechanical drawing



(Unit:mm)