

SPECIFICATION
For
SWITCHING POWER SUPPLY

M/N: MPE-G123(-SB)

Revision History

Version	Revise Date	Change Items
Rev. 01	Dec. 16. 2011	Established.
Rev. 02	Jan. 19. 2012	Added new option of connector "JST" type.
Rev. 03	Apr. 2. 2012	Revised connector's picture.
Rev. 04	May. 21. 2012	Added mechanical drawing.
Rev. 05	Jul. 26. 2012	Updated pin assignment.
Rev. 06	Sep. 3. 2012	Revised the mechanical drawing.
Rev. 07	Sep. 11. 2012	Added DC input specification; Updated safety approvals status.
Rev. 08	Jan. 30. 2013	Updated operating altitude from 2000m to 3000m.
Rev. 09	Jun. 21. 2013	Added installation note.
Rev. 10	May. 21. 2015	Changed the initial setting accuracy of +5Vsb from $\pm 1.5\%$ to $\pm 2.5\%$.
Rev. 11	Jan. 19. 2016	<ol style="list-style-type: none"> 1.Changed +5Vsb Rated Output Current 0.1A to "-", Max Output Current 0.1A to 0.5A. 2.Added note 6 at Description. 3.Added "or equivalent" after "Molex" , " European" ,"JST" and " Dinkle". 4.Changed Molex Proposed Terminals from 5176 to 5167.
Rev. 12	Jan. 5. 2018	<ol style="list-style-type: none"> 1.Changed new form. 2. Added EN 55032.
Rev. 13	Jun. 28. 2018	Changed mechanical diagram.
Rev. 14	Jan. 22. 2019	Added output current to output field.
Rev. 15	May. 21. 2020	Changed Isolation" IP to GND" to 1800 VAC.
Rev. 16	Aug. 18. 2020	Changed Safety Approvals.

MPE-G123(-SB)

120W AC / DC



FEATURES

- ✓ 120W, peak 150W convection-cooled.
- ✓ Active power factor correction.
- ✓ High efficiency up to 88%.
- ✓ No-load power consumption < 0.5W.
- ✓ Compact size 3 x 5 inch and low profile.
- ✓ Class II, also class I with optional functional ground connected.
- ✓ Optional +5Vsb and remote on/off function.
- ✓ ITE standard IEC, EN, UL 60950-1 2nd Edition approved.
- ✓ CE-LVD EN 62368-1:2014+A11:2017.
- ✓ Meets EMI CISPR 22 / FCC Part 15 class B.



Models & Ratings

Model Number	Wattage (Rated / Max)	Output Voltage	Min. Current	Rated Current	Max. Current
MPE-G123	120 W / 150 W	+12 V	0 A	10.0 A	12.5 A
MPE-G123-SB	120 W / 150 W	+12 V	0 A	10.0 A	12.5 A
		+5Vsb	0 A	-	0.5 A

Total Output Power: Max. 120W with convection cooled, 150W with 11.7 CFM at 50°C (Note 1) environment temperature. Max. 120W with 11.7 CFM at 70°C environment temperature (Note 2).

1. Peak load with convection cooled up to 150W keeps 10 seconds, please see the below. To boosting the output power, it shall be met the following conditions at the same time.

The peak load shall not over the specified value.
The duration of peak load shall less than 10 seconds.
The duty cycle shall be met the following formula.

2. Air flow from transformer to the body of PSU with distance 10mm maximum.
3. Max output current can be sustained if the total power doesn't exceed 120W.
4. Model no. coding:

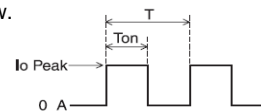
MPE-G123 - Y - Z

1
2

Y=	Output number
blank	Single output
SB	Dual output (with +5Vsb & remote on/off function)

2

1



$$I_{o2}^2 \geq (I_{o \text{ Peak}})^2 \times (T_{on} / T)$$

I_{o2} : Rated output current
 $I_{o \text{ Peak}}$: Peak output current
 T: Duty cycle
 T_{on} : Duration of peak load.

Z=	Input Connector Type	Output Connector Type
blank	Molex Type Connector or equivalent	Molex Type Connector or equivalent
E	Molex Type Connector or equivalent	European Type Connector or equivalent
J	JST Type Connector or equivalent	JST Type Connector or equivalent

Please see the detail in Mechanical Specification

Summary

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Range	85	115 / 230	264	VAC	Continuous input range.
	130		370	VDC	
Input Frequency	47	50 / 60	63	Hz	At AC input.
Efficiency	87	88		%	At input 230VAC, rated load, above 1 hr. warm up.
Operation Temperature	-20		+70	°C	Derate linearly above 50°C by 3.35% per °C to a maximum temperature of 70°C at 50% load.
Weight		226.5		g	-SB is 231.4 g
Dimensions	127 (L) x 76.2 (W) x 34.3 (H) mm, Tolerance +/- 0.4mm.				
EMC	EN 55022 / EN 55032, CISPR 22 & FCC Part 15, EN 61000-3-2, EN 61000-3-3, EN 61204-3, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11				
Safety Approvals	IEC 60950-1: 2005+A11: 2009, 2 nd edition, EN 60950-1: 2006+A11, 2 nd edition, UL 60950-1, 2nd Edition, 2007-03-27, CSA C22.2 No. 60950-1-07, 2nd Edition, 2007-03. LVD EN62368-1:2014+A11:2017 Approved.				

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage	85	115 / 230	264	VAC	Continuous input range.
	130		370	VDC	
Input Frequency	47	50 / 60	63	Hz	At AC input.
Input Current			2.5	A	Nominal AC Input Voltage (115VAC), rated load.
Inrush Current			30 / 60	A	Nominal AC Input Voltage (115/230VAC), one cycle at 25°C cold start.
No-load power consumption			< 0.5	W	Nominal AC Input Voltage (115/230VAC).
Input Protection	One non-user serviceable internally located AC input line fuse. Fuse : 3.15A / 250VAC * 1 pcs				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage		12 V		DC	
		+5Vsb			
Output Current		10.0	12.5 ^(V1)	A	
			0.5 ^(V2)		
Initial Set Accuracy		±1.0 ^(V1) ±2.5 ^(V2)		%	Initial setting accuracy is at Input 115VAC and output at 60% rated load.
Minimum Load		0		A	
Start Up Delay		1	2.5	Sec	Time required for initial output voltage stabilization.
Hold Up Time	20 / 40			mS	Nominal AC Input Voltage (115/230VAC), rated load.
Line Regulation		±1.0 ^(V1) ±1.0 ^(V2)		%	Less than ±1% at rated load with ±10% changing in input voltage 115VAC.
Load Regulation		±1.0 ^(V1) ±1.0 ^(V2)		%	Measured from 60% to 100% rated load and from 60% to 20% rated load (60% ±40% rated load).
Ripple & Noise		120 ^(V1) 50 ^(V2)		mV	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.
Leakage Current			0.25	mA	At input 264VAC, 63Hz, rated load.
Remote On / Off	The power supply will be turned on when the power On/Off pin is connected to secondary GND. This function exists only with optional +5Vsb.				
Overvoltage 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.				
Short Circuit Protection	Fully protected against output overload and short circuit. Automatic recovery upon of overload condition.				

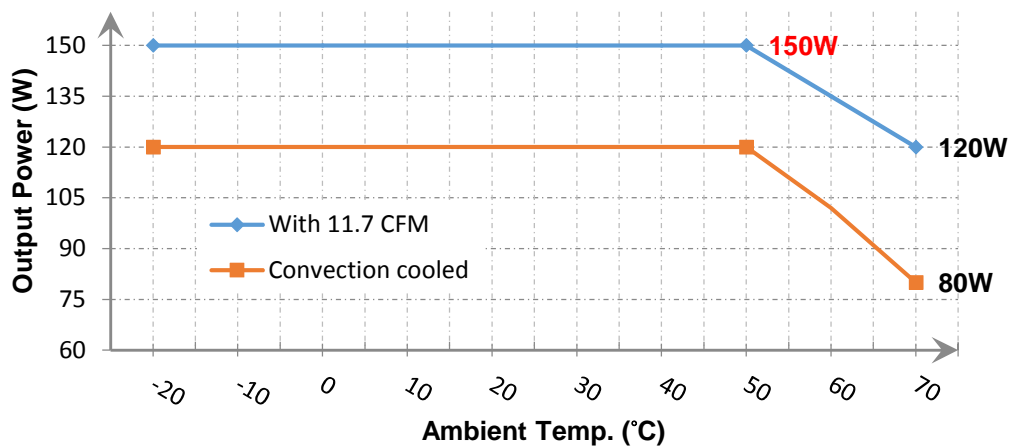
General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency	87	88		%	At input 230VAC, rated load, above 1 hr. warm up.
Isolation	IP to OP	3000		VAC	
	IP to GND	1800		VAC	
Switching Frequency		65		KHZ	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-20		+70	°C	Derate linearly above 50°C by 3.35% per °C to a maximum temperature of 70°C at 50% load.
Storage Temperature	-40		+85	°C	
Relative Humidity	5		95	%RH	Non-condensing.
Cooling	11.7			CFM	Forced-cooled when > 120W
Operating / Non-Operating Altitude		3000 / 4000		m	

Derating curve



Performance Curves of MPE-G120 Series

EMC: Emissions

Phenomenon	Standard	Class	Notes & Conditions
Conducted	EN 55022 / EN 55032 CISPR 22 & FCC Part 15	B	
Radiated	EN 55022 / EN 55032 CISPR 22 & FCC Part 15	B	
Harmonic	EN 61000-3-2	D	
Voltage Flicker	EN 61000-3-3		

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	L-N:±1KV, L/N-PE:±2KV
Conducted	IEC 61000-4-6	A	10V
Power Magnetic	IEC 61000-4-8	A	10A/m
Dips and Interruptions	IEC 61000-4-11	A A A / B C	DIP: >95%, 0.5 cycle DIP: 30%, 25 cycles DIP: 60%, 5 cycles ^(Note 2) INT: >95%, 250 cycles

Note:

- Above specification is applied with output equal or below 120W. For higher output power, please re-confirm with us.
- The test result of input 240Vac / 100Vac is criteria A / B.
- 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.
- The EMC test conditions are at AC input voltage. It is not been verified at DC input voltage.

Safety Approvals

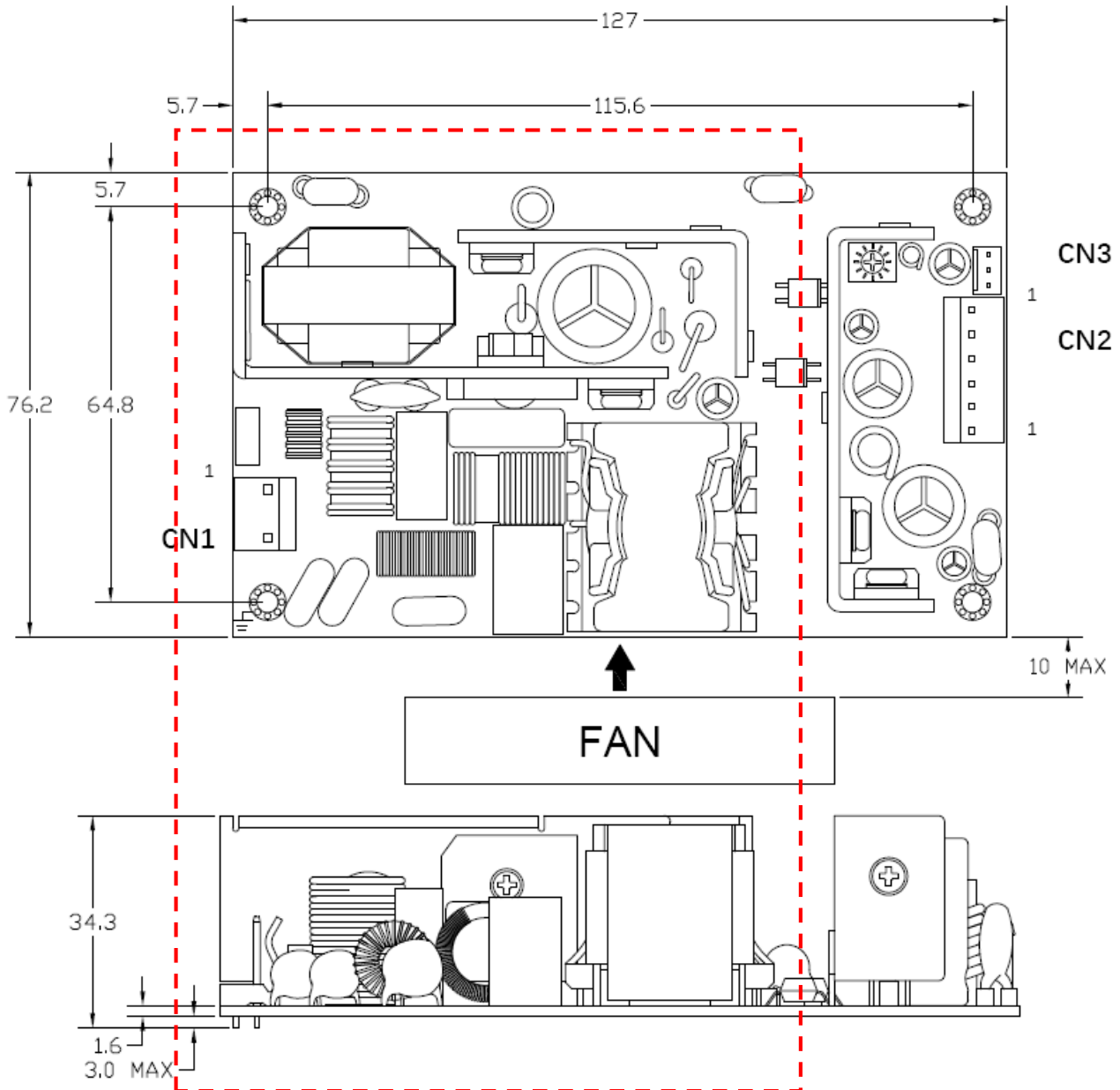
Safety Agency	Safety Standard	Notes & Conditions
TUV	EN 60950-1: 2006+A11, 2 nd edition	Design to meet.
CB	IEC 60950-1: 2005+A11: 2009, 2 nd edition	Approved.
UL/cUL	UL 60950-1, 2nd Edition, 2007-03-27, CSA C22.2 No. 60950-1-07, 2nd Edition, 2007-03	Approved.
CE-LVD	EN 62368-1:2014+A11:2017	Approved.

Mechanical Details

M/N: MPE-G123

Unit: mm

SIZE : 127(L) x 76.2(W) x 34.3(H)mm, Tolerance +/-0.4mm.



Note:1. The installation shall be kept in an isolation distance min. 2.9mm between the unit and the system chassis. There exist hazardous voltage in dotted area, keep insulating to avoid hazardous electric shock.

Parameter	Conditions/Description				
Dimension	127 (L) x 76.2 (W) x 34.3 (H) mm, Tolerance +/- 0.4mm.				
Connector & Pin Assignment	Location	Pin	Assignment	Proposed Housing	Proposed Terminals
	CN1 (Input)	1	AC in (L)	MOLEX: 09-50-1031 (5195-03) or 09-52-4034 (5239-03) or equivalent JST: VHR-3N or equivalent (Note 3)	MOLEX: 5194 or 5225 2478, 2578,5167 or 5168 or equivalent JST: SVH-21T-P1.1 or equivalent
		2	AC in (N)		
	CN2 (Output)	1	+ V	MOLEX: 09-50-1061 (5195-06) or 09-52-4064 (5239-06) or equivalent JST: VHR-6N or equivalent (Note 3) Dinkle: ESD Series or equivalent(Note 1)	MOLEX: 5194 or 5225 2478, 2578,5167 or 5168 or equivalent JST: SVH-21T-P1.1 or equivalent Dinkle: N/A
		2	+ V		
		3	+ V		
		4	0 V		
		5	0 V		
	CN3(Note 2) (Option)	6	0 V	MOLEX: 22-01-1032 (5051-03) or 51191-0300 or equivalent JST: XHP-3 or equivalent (Note 3)	MOLEX: 2759 or 5159 50802 or equivalent JST: SXH-001T-P0.6N, SXH-001T-P0.6 or SXH-002T-P0.6 or equivalent
		1	+5Vsb		
		2	0 V		
			3	Remote On/off	

Note:

- 1.Exist with model no. suffixed -E, the pin assignment of CN2 is Pin 1~2 for + V, Pin 3~4 for - V; please also refer to the comparison in Model no. coding:
- 2.Exist with model no. suffixed -SB, please see the comparison in Model no. coding:
- 3.Exist with model no. suffixed -J, please see the comparison in Model no. coding:

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°C
Q1	120°C
D5, D6	120°C
C7	105°C
C21	105°C