

**SPECIFICATION**  
**For**  
**SWITCHING POWER SUPPLY**

**M/N: MPI-822H-B(-C)**





### FEATURES

- ✓ 220W open frame ATX.
- ✓ Active PFC Class D.
- ✓ Meets EMI EN 55022 Class B.
- ✓ U chassis design for thermal conduction.
- ✓ Input wattage <0.5W at no load condition.
- ✓ Optional cover provided is available (see Options).
- ✓ ITE safety standard IEC 62368-1, UL 62368-1 approved.

### Models & Ratings

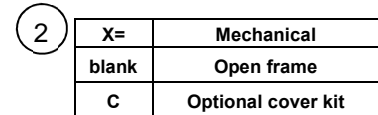
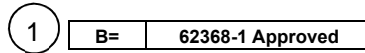
Model Number	Wattage (Rated / Max)	Output Voltage		Min. Current (Note 2)	Rated Current	Max. Current (Note 1)
		V1	V2			
MPI-822H-B	170 W / 220 W	+5 V		2.5 W	11.0 A	14.0 A
		+12 V			5.0 A	12.0 A
		-12 V		0 A	0.5 A	1.0 A
		+3.3 V		0 A	7.5 A	12.0 A
		+5Vsb		0 A	0.75 A	2.0 A

Total Output Power: Max. 220W with force air cooling<sup>(Note 3)</sup>; 170W convection cooled at 40°C and 150W convection cooled at 50°C environment temperature<sup>(Note 4)</sup>.

Note:

1. The maximum total combined output power on the +3.3V and +5V rails is 90W at convection cooled condition, and 100W with force air cooling.<sup>(Note 3)</sup>
2. Total minimum load 2.5 watts, which is combination or any one from +5V & +12V output, is required.
3. It is required 23.3CFM at environment temperature below 65°C; 38.8CFM at 65~70°C.
4. For the optional cover provided version, please see the performance curves for detail.
5. Model no. coding:

**M P I - 8 2 2 H - B - X**



### Summary

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Range	90	115 / 230	264	VAC	Continuous input range.
Input Frequency	47		63	Hz	AC input.
Efficiency			83	%	At 200VAC, Rated load, without cover provided.
Operation Temperature	-10 <sup>(Note 1)</sup>		+70	°C	Derate linearly above 50°C <sup>(Note 2)</sup> .
Weight		738.2		g	
Dimensions	198.0 (L) x 97.0 (W) x 40.5 (H) mm, Tolerance +/- 0.4mm.				
EMC	EN 55022 / EN 55032 / CISPR 22 & FCC Part 15, EN 61000-3-2, EN 61000-3-3 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	EN 60950-1, 2 <sup>nd</sup> edition, UL 60950-1, 2nd edition, CSA C22.2 No. 60950-1-07, 2nd Edition IEC 62368-1, UL 62368-1, 2nd Edition				

Note:

1. The min. operating temperature would be 0°C if input is lower than 115Vac.
2. Derate linearly above 40°C with cover provided version.

### Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage	90	115 / 230	264	VAC	Continuous input range.
Input Frequency	47		63	Hz	AC input.
Input Current			4 / 2	A	Nominal AC Input Voltage (115VAC/230VAC), rated load.
Inrush Current			30 / 60	A	Nominal AC Input Voltage (115VAC/230VAC), one cycle at 25°C.
No-load consumption	0.14		0.5	W	Nominal AC Input Voltage (115VAC/230VAC), no any output except 5Vsb, and no any loading in secondary side.
Input Protection	Non-user serviceable internally located AC input line fuse. Fuse : 5A / 250VAC * 1pcs				

### Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage		+5 V		DC	
		+12 V			
		-12 V			
		+3.3 V			
		+5Vsb			
Output Current		11.0	14.0	A	
		5.0	12.0		
		0.5	1.0		
		7.5	12.0		
		0.75	2.0		
Initial Set Accuracy	4.95		5.05	V	Initial Setting Accuracy is at Input 115VAC and all output at 60% rated load.
	11.6		12.6		
	-11.4		-12.6		
	3.20		3.40		
	4.80		5.20		
Minimum Load		2.5		W	At Output Voltage +5V, +12 V <sup>(Note 1)</sup>
		0		A	At Output Voltage -12 V, +3.3 V, +5Vsb
Start Up Delay	0.3		5	Sec	Time required for initial output voltage stabilization.
Hold Up Time	20 / 30	24 / 36		mS	Nominal AC Input Voltage (115VAC/230VAC),
Line Regulation		±1.0 <sup>(V1)</sup> ±1.0 <sup>(V2)</sup> ±1.0 <sup>(V3)</sup> ±1.0 <sup>(V4)</sup> ±1.0 <sup>(V5)</sup>		%	Less than ±1% at rated load with ±10% changing in input voltage.
Load Regulation		±2.0 <sup>(V1)</sup> ±4.0 <sup>(V2)</sup> ±5.0 <sup>(V3)</sup> ±4.0 <sup>(V4)</sup> ±4.0 <sup>(V5)</sup>		%	Measured from 60% to 100% rated load and from 60% to 20% rated load (60% ±40% rated load) for each output, and keep other outputs at 60% rated load.
Ripple & Noise		50 <sup>(V1)</sup> 120 <sup>(V2)</sup> 120 <sup>(V3)</sup> 50 <sup>(V4)</sup> 100 <sup>(V5)</sup>		mV	Measured at rated load by a 20MHz bandwidth limited oscilloscope and the each output is connected with a 10µF Electrolytic Capacitor and a 0.1uF Ceramic Capacitor.
Short Circuit Protection	Fully protected against short circuit. Latch off mode upon of short circuit condition <sup>(Note 2)</sup> .				
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 7V max. at +5V. If the OVP occur, PSU cannot be recovered.				
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. After the temperature going down, the power supply will restart automatically.				

Note:

- Total minimum load 2.5 watts, which is combination or any one from +5V & +12V output, is required.
- Only +5Vsb and -12V is protected by auto recovery.

### General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency			83	%	At 200VAC, Rated load, without cover provided.
Isolation   IP to OP	3000			VAC	
Switching Frequency		65		KHZ	
Power Good Signal	When power is turned on, the power good signal will go high 100ms to 500ms after all output DC voltages are within regulation limits.				
Power Fail Signal	The power fail signal will go low at least 1ms before any of the output voltages fall below the regulation limits.				
Power On / Off	The power supply will be turned on when the power On/Off pin is connected to secondary GND.				

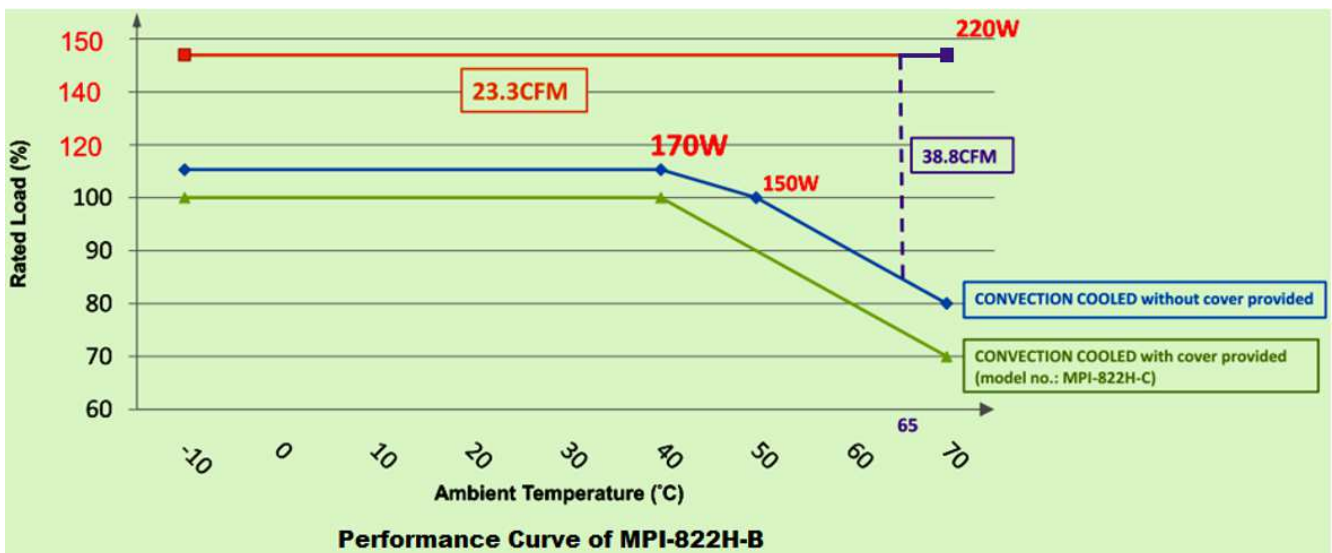
### Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-10 <sup>(Note 1)</sup>		+70	°C	Derate linearly above 50°C <sup>(Note 2)</sup>
Storage Temperature	-40		+70	°C	
Relative Humidity	5		95	%RH	Non-condensing.
Operating / Non - Operating Altitude			4000	m	62368-1 Approved

Note:

1. The min. operating temperature would be 0°C if input is lower than 115Vac.
2. Derate linearly above 40°C with cover provided version.

### Derating curve



### 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 Current	EN 61000-3-2	D	
Voltage Flicker	EN 61000-3-3	D	

### EMC: Immunity

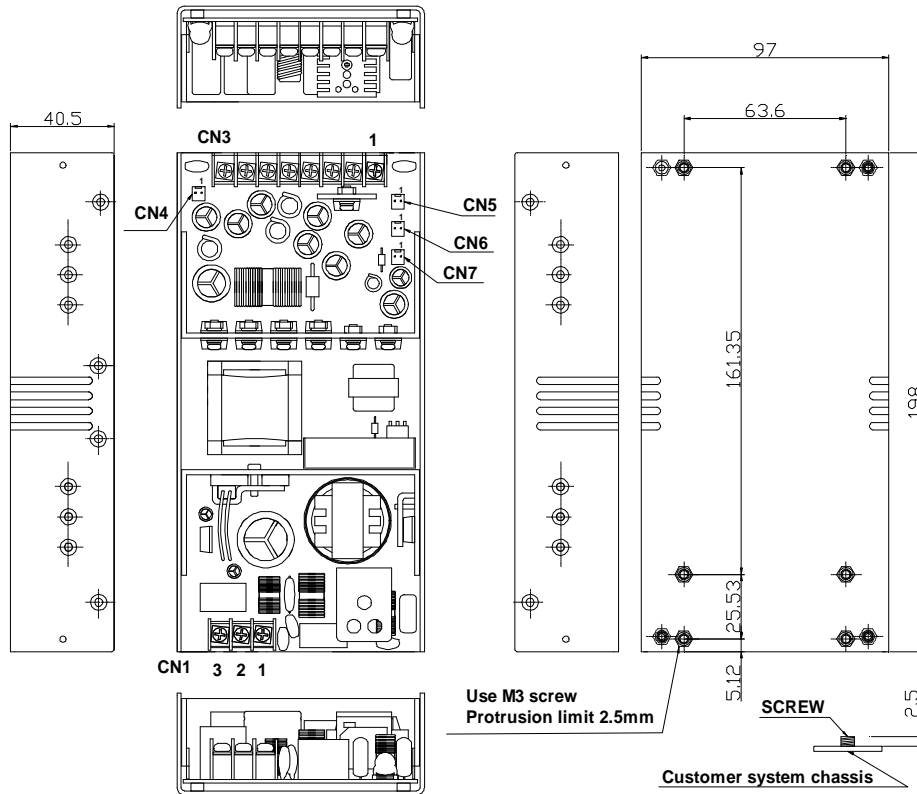
Phenomenon	Standard	Criteria	Notes & Conditions
ESD	IEC 61000-4-2	A	8KV air discharge, 6KV contact discharge
Radiated	IEC 61000-4-3	A	3V/m
EFT	IEC 61000-4-4	A	2KV Line & PE
Surges	IEC 61000-4-5	A	L-N: 1KV; L/N-PE: 2KV
Conducted	IEC 61000-4-6	A	10V
Power Magnetic	IEC 61000-4-8	A	10A/m
Dips and Interruptions	IEC 61000-4-11	A A B	DIP: >95%, 0.5 cycle DIP: >30%, 25 cycles INT: >95%, 250 cycles

### Safety Approvals

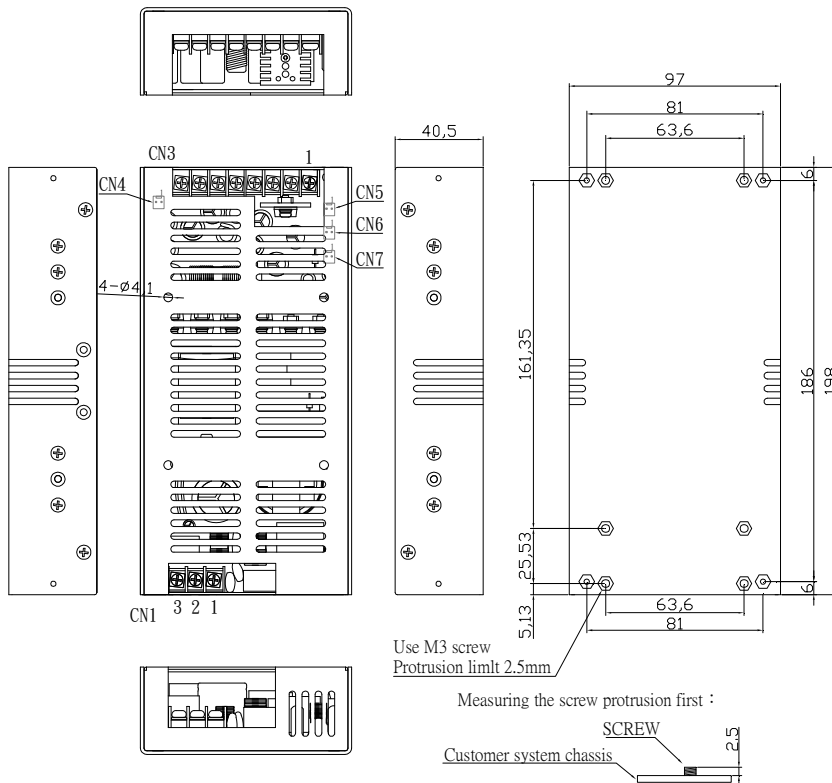
Safety Agency	Safety Standard	Notes & Conditions
TUV	EN 60950-1, 2 <sup>nd</sup> edition,. EN 62368-1, 2nd Edition	Declaration of conformity.
UL/cUL	UL 60950-1, 2nd edition CSA C22.2 No. 60950-1-07, 2nd Edition UL 62368-1, 2nd Edition	Approved.

## Mechanical Details

SIZE : 198.0 (L) x 97.0 (W) x 40.5 (H) mm, Tolerance +/- 0.4mm.  
MPI-822H-B



MPI-822H-B-C

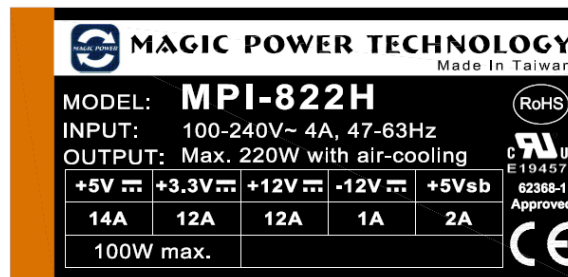


Parameter	Conditions/Description				
Dimension	198 (L) x 97 (W) x 40.5 (H) mm, Tolerance +/- 0.4mm.				
Connector	CN1 --- AC input:	3 Positions Terminal blocks.			
	CN3 --- DC output:	8 Positions Terminal blocks.			
	CN4 --- Fan Connector:	Molex 5045-02A or equivalent			
	CN5 --- PG/PF:	Molex 5045-02A or equivalent			
	CN6 --- PS ON/OFF:	Molex 5045-02A or equivalent			
	CN7 --- 5Vsb:	Molex 5045-02A or equivalent			
Pin Assignment	CN1	Pin	1. L	2. N	3. GND
	CN3	Pin	1. -12V	2. GND	3. 3.3V
			4. GND	5. +5V	6. +5V
			7. +12V	8. GND	
	CN4 (Fan)	Pin	1. +12V	2. GND	
	CN5	Pin	1. GND	2. PG / F	
	CN6	Pin	1. GND	2. ON / OFF	
CN7	Pin	1. GND	2. 5Vsb		

Parameter	Conditions/Description
Cable (No. 866-815H)	ATX connector, HDD connector x 2, FDD connector x 1, SATA connector x 1
Cover (P/N:831-815U)	Order part number with suffix code "-C", with cover assembled.

### Labeling

The labeling of MPI-822H-B is shown below for reference.



### 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
D1	120°C
C23	105°C
C7, C8	105°C