



MPI-822H-B(-C)

220W AC / DC

SPECIFICATION

For

SWITCHING POWER SUPPLY

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



MPI-822H-B(-C)

220W AC / DC



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

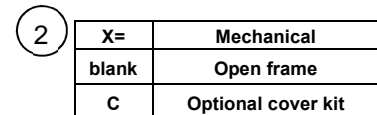
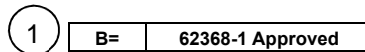
| Model Number | Wattage (Rated / Max) | Output Voltage | | Min. Current (Note 2) | Rated Current | Max. Current (Note 1) |
|--------------|-----------------------|----------------|----|-----------------------|---------------|-----------------------|
| | | V1 | V2 | | | |
| MPI-822H-B | 170 W / 220 W | +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^(Note 3); 170W convection cooled at 40°C and 150W convection cooled at 50°C environment temperature^(Note 4).

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.^(Note 3)
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 ^(Note 1) | | +70 | °C | Derate linearly above 50°C ^(Note 2) . |
| 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 nd 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.



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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 ^(Note 1) |
| | | 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 ^(V1) ±1.0 ^(V2) ±1.0 ^(V3) ±1.0 ^(V4) ±1.0 ^(V5) | | % | Less than ±1% at rated load with ±10% changing in input voltage. |
| Load Regulation | | ±2.0 ^(V1) ±4.0 ^(V2) ±5.0 ^(V3) ±4.0 ^(V4) ±4.0 ^(V5) | | % | 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 ^(V1) 120 ^(V2) 120 ^(V3) 50 ^(V4) 100 ^(V5) | | 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 ^(Note 2) . | | | | |
| 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:

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

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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. | | | | |

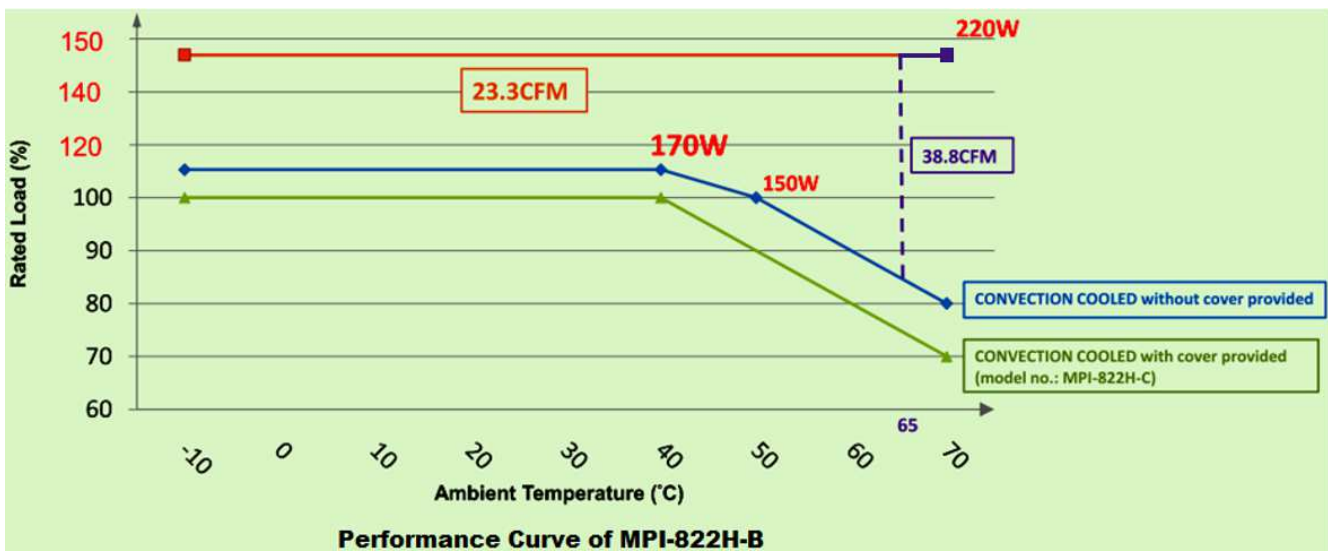
Environmental

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|--------------------------------------|-------------------------|---------|---------|-------|--|
| Operating Temperature | -10 ^(Note 1) | | +70 | °C | Derate linearly above 50°C ^(Note 2) |
| 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





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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 nd 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. |

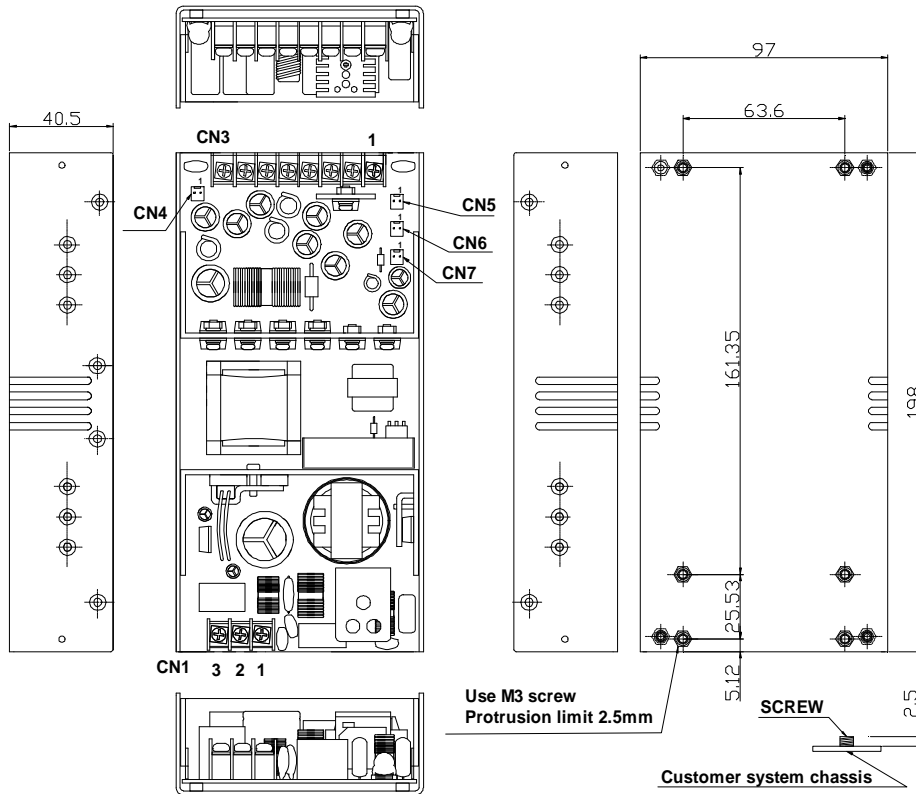


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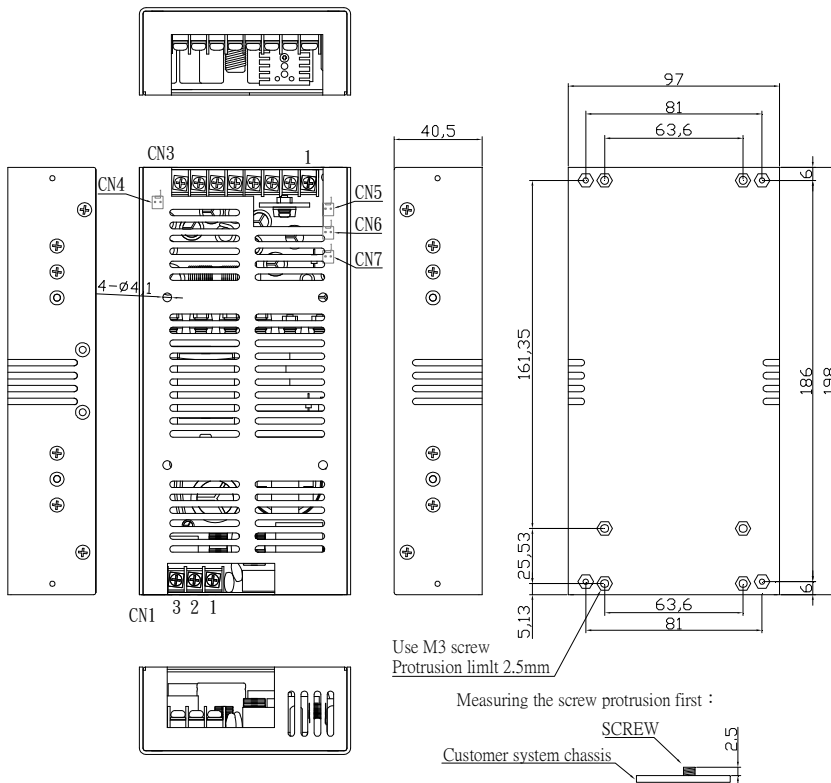
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Mechanical Details

SIZE : 198.0 (L) x 97.0 (W) x 40.5 (H) mm, Tolerance +/- 0.4mm.
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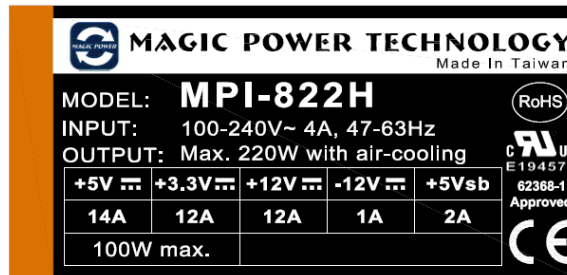
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| Parameter | Conditions/Description | | | | |
|----------------|--|------------------------------|---------|-------------|---------|
| Dimension | 198 (L) x 97 (W) x 40.5 (H) mm, Tolerance +/- 0.4mm. | | | | |
| Connector | CN1 --- AC input: | 3 Positions 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 |