

SPECIFICATION
For
SWITCHING POWER SUPPLY

M/N: MPI-815H

Revision History

| Version | Revise Date | Change Items |
|---------|---------------|---|
| Rev. 01 | Dec. 20. 2007 | Adding index page and correct typing error from "convention" to "convection". |
| Rev. 02 | Feb. 14. 2008 | OVP from 5.4-5.85V to 7V max. |
| Rev. 03 | Jun. 24. 2008 | Remove the tautological Hold Up Time in section 5. |
| Rev. 04 | Apr. 8. 2009 | Updating mechanical dimension (Height). |
| Rev. 05 | Sep. 28. 2010 | Revising the specification of fix screws. |
| Rev. 06 | Nov. 4. 2010 | Updating spec of fixed screws. |
| Rev. 07 | Mar. 28. 2011 | Updating the safety approval status; revised the hi-pot withstand. |
| Rev. 08 | Nov. 24. 2014 | 1. Correct writing at load regulation definition in 3.0. 2. Operating temperature from -20~+70 to -40~+70. |
| Rev. 09 | July. 5. 2016 | 1. Adding No derating with 21.5CFM forced air-cooling at 100% load up to maximum temperature of 70°C. 2. Changed Altitude Operating and Non-Operating to 5KM. 3. Adding FAN position diagram. |
| Rev. 10 | Feb. 8. 2018 | 1.Changed form. 2.Added EN 55032. |
| Rev. 11 | Jan. 16. 2019 | Added output current to output field. |



FEATURES

- ✓ 150W with active PFC convection cooled for P4 application.
- ✓ Power Good/Power Fail signal.
- ✓ +5V Stand by & Remote On/Off.
- ✓ MTBF>130,000 hr. MIL-217F at 50 degree.
- ✓ Thermal protection.



Models & Ratings

| Model Number | Wattage (Rated / Max) | Output Voltage | | Min. Current (Note 1) | Rated Current | Max. Current (Note 1) |
|--------------|-----------------------|----------------|--------|-----------------------|---------------|-----------------------|
| MPI-815H | 90 W / 150 W | V1 | +5 V | 1 A | 11.0 A | 14.0 A |
| | | V2 | +12 V | 0 A | 5.0 A | 10.0 A |
| | | V3 | -12 V | 0 A | 0.5 A | 1 A |
| | | V4 | +3.3 V | 0 A | 7.5 A | 12.0 A |
| | | V5 | +5Vsb | 0 A | 0.75 A | 1.5 A |

Total Output Power: 150W at 50°C environment temperature.

Note:

1. The maximum total combined output power on the +3.3V and +5V rails is 90W.

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 | | 75 | | % | Rated load, 115VAC. Varies with distribution of loads among output. |
| Operation Temperature | 0 | | +70 | °C | Derate linearly above 50°C by 2.5% per °C to a maximum temperature of 70°C at 50% load. |
| | 0 | | +70 | °C | No derating with 21.5CFM forced air-cooling up to maximum temperature of 70°C. |
| Weight | | 642 | | 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: 2006+A1: 2010 2 nd , IEC 60950-1: 2005+A1: 2009 2 nd , UL 60950-1, 2 nd Edition, 2007-03-27, CSA C22.2 No. 60950-1-07, 2 nd Edition, 2007-03 | | | | |

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. |
| Input Protection | Non-user serviceable internally located AC input line fuse. Fuse : 4A / 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 | 10.0 | | |
| | | 0.5 | 1 | | |
| | | 7.5 | 12.0 | | |
| | | 0.75 | 1.5 | | |
| Initial Set Accuracy | 5.05 | | 5.15 | VDC | Initial Setting Accuracy is at Input 110VAC 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 | | 1 | | A | At Output Voltage +5V At Output Voltage +12 V, -12 V, +3.3 V, +5Vsb |
| | | 0 | | | |
| Start Up Delay | 0.3 | | 6 | Sec | Time required for initial output voltage stabilization. |
| Hold Up Time | 16 | | | mS | Nominal AC Input Voltage (115VAC), rated load. |
| 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) 100 ^(V2) 150 ^(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 0.1µF Ceramic Capacitor. |
| Short Circuit Protection | Fully protected against short circuit. Latch off mode upon of short circuit condition. | | | | |
| 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. The protection point is at the temperature of the HS1 over 110°C. After the temperature of HS1 going down, the power supply will restart automatically. | | | | |

General

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|----------------------|---|---------|---------|-------|---|
| Efficiency | | 75 | | % | Rated load, 115VAC. Varies with distribution of loads among output. |
| 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 1 mS 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 | 0 | | +70 | °C | Derate linearly above 50°C by 2.5% per °C to a maximum temperature of 70°C at 50% load. |
| | 0 | | +70 | °C | No derating with 21.5CFM forced air-cooling up to maximum temperature of 70°C. |
| Storage Temperature | -40 | | +70 | °C | |
| Relative Humidity | 5 | | 95 | %RH | Non-condensing. |
| Operating / Non- Operating Altitude | | 5000 | | m | |

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

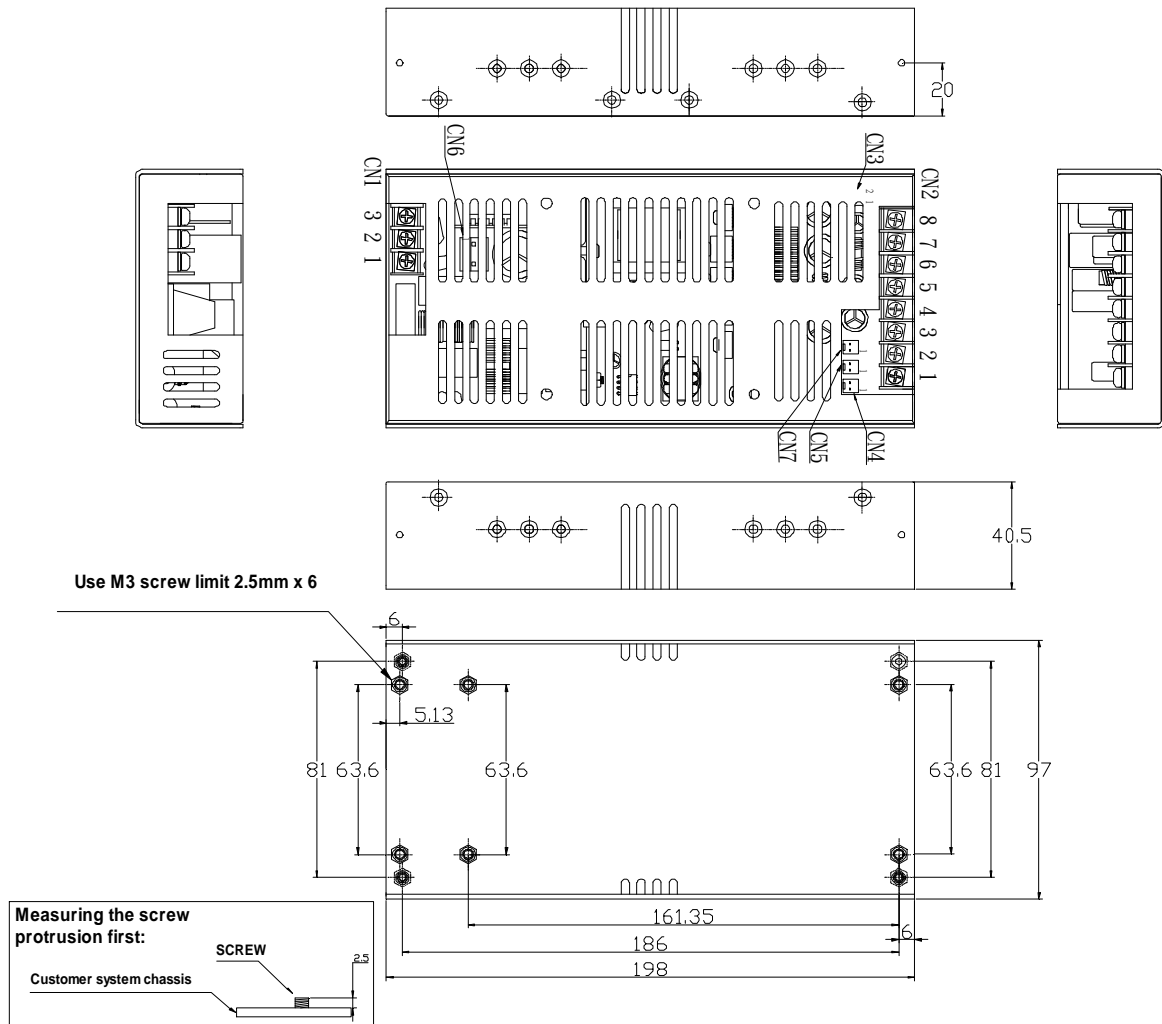
| Phenomenon | Standard | Criteria | Notes & Conditions |
|------------------------|----------------|-------------|---|
| ESD | IEC 61000-4-2 | A | 8KV air discharge, 6KV contact discharge |
| Radiated | IEC 61000-4-3 | A | 3V/m |
| EFT | IEC 61000-4-4 | A | 2KV Line & PE |
| Surges | IEC 61000-4-5 | A | 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 C C | DIP: >95%, 0.5 cycle DIP: >30%, 25 cycles INT: >95%, 250 cycles |

Safety Approvals

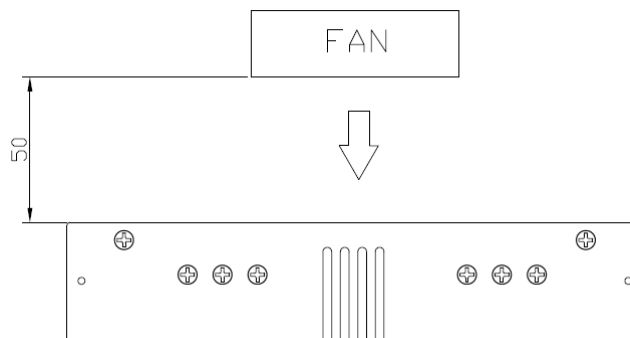
| Safety Agency | Safety Standard | Notes & Conditions |
|---------------|---|--------------------|
| TUV | EN 60950-1: 2006+A1: 2010 2 nd | Approved. |
| CB | IEC 60950-1: 2005+A1: 2009 2 nd | Approved. |
| UL/cUL | UL 60950-1, 2 nd Edition, 2007-03-27 CSA C22.2 No. 60950-1-07, 2 nd Edition, 2007-03 | Approved. |

Mechanical Details

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



FAN position diagram



| 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. CN2 --- DC output: 8 Positions Terminal blocks. CN3 --- Fan Connector: Molex 5045-02A or equivalent CN4 --- DC output: Molex 5045-02A or equivalent CN5 --- PS ON/OFF: Molex 5045-02A or equivalent CN6 --- UPS Connector: Molex 5273-03A with draw 1 pin or equivalent. CN7 --- PG/PF: Molex 5045-02A or equivalent | | | | |
| Pin Assignment | CN1 | Pin | 1. L | 2. N | 3. GND |
| | CN2 | Pin | 1. -12V | 4. GND | 7. +12V |
| | | | 2. GND | 5. +5V | 8. GND |
| | | | 3. 3.3V | 6. +5V | |
| | CN3 | Pin | 1. +12V | 2. GND | |
| | CN4 | Pin | 1. +5Vsb | 2. GND | |
| | CN5 | Pin | 1. +5V | 2. GND | |
| | CN6 | Pin | 1. +380V | 2. GND | |
| | CN7 | Pin | 1. +5V | 2. GND | |

| Options | Conditions/Description | DIMENSIONS (mm) |
|----------------------|---|-----------------|
| Parameter | | |
| Cable (No. 866-815H) | ATX connector, HDD connector x 2, FDD connector x 1 | |

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 |
| Q2 | 120°C |
| D8 | 120°C |
| C5A | 105°C |
| C10 | 105°C |