# SPECIFICATION

For

SWITCHING POWER SUPPLY

## M/N: MPI-815H

Revision Index

| | | |
|---|---|---|
| REV. | Dec. 20th 2007 | Adding index page and correct typing error from “convention” to “convection”. |
| REV. | Feb. 14th 2008 | OVP from 5.4-5.85V to 7V max. |
| REV. | Jun. 24th 2008 | Remove the tautological Hold Up Time in section 5. |
| REV. | Apr. 8th 2009 | Updating mechanical dimension (Height). |
| REV. | Sep. 28th 2010 | Revising the specification of fix screws. |
| REV. | Nov. 4th 2010 | Updating spec of fixed screws. |
| REV. | Mar. 28th 2011 | Updating the safety approval status; revised the hi-pot withstand. |
| REV. | Nov. 24th 2014 | a. Correct writing at load regulation definition in 3.0<br>b. Operating temperature from -20~+70 to -40~+70 |
| REV. | July. 05th 2016 | a.Adding No derating with 21.5CFM forced air-cooling at 100% load up to maximum temperature of 70°C.<br>b.Changed Altitude Operating and Non-Operating to 5KM<br>c.Adding FAN position diagram |

## 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.

## 1. Description

MPI-815H is a150W ATX power supply with active PFC for industrial and embedded system application. The device utilizes a thermally efficient U channel chassis design. Design to be convection cooled.

| Output Voltage | Mini. Output Current | Rated Output Current | Max output Current (Note 1) | Line Regulation | Load Regulation | Ripple & Noise p-p (Note 2) | Initial Setting Accuracy (Note 3) |
|---|---|---|---|---|---|---|---|
| **+5V** | 1A | 11A | 14A | ±1% | ±2% | 50mV | 5.05V to 5.15V |
| **+12V** | 0A | 5A | 10A | ±1% | ±4% | 100mV | 11.6V to 12.6V |
| **-12V** | 0A | 0.5A | 1A | ±1% | ±5% | 150mV | -11.4V to -12.6V |
| **+3.3V** | 0A | 7.5A | 12A | ±1% | ±4% | 50mV | 3.20V to 3.40V |
| **+5Vsb** | 0A | 0.75A | 1.5A | ±1% | ±4% | 100mV | 4.80V to 5.20V |

**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.
2) Measured by a 20MHz bandwidth limited oscilloscope and the each output is connected with a 10µF Electrolytic Capacitor and a 0.1µF Ceramic Capacitor.
3) Initial Setting Accuracy is at Input 110VAC and all output at 60% rated load.

## 2. Input Specification

| Parameter | Conditions/Description | Min. | Nom. | Max. | Units |
|---|---|---|---|---|---|
| Input Voltage | Continuous input range. | 90 | 115/230 | 264 | VAC |
| Input Frequency | AC input. | 47 | | 63 | Hz |
| Hold Up Time | Nominal AC Input Voltage (115VAC), rated load. | 16 | | | ms |
| Input Current | Nominal AC Input Voltage (115VAC/230VAC), rated load. | | | 4/2 | A |
| Inrush Current | Nominal AC Input Voltage (115VAC/230VAC), one cycle at 25˚C. | | | 30/60 | A |
| Input Protect | Non-user serviceable internally located AC input line fuse. | | | | |

## 3. Output Specification

| Parameter | Conditions/Description | Min. | Nom. | Max. | Units |
|---|---|---|---|---|---|
| Efficiency | Rated load, 115VAC. Varies with distribution of loads among output. | | 75 | | % |
| Minimum load | | See Chart of Description | | | |
| Ripple & Noise | Rated load, 20MHz bandwidth | See Chart of Description | | | |
| Output Power | Continuous output power. | See Chart of Description | | | |
| Line Regulation | Less than ±1% at rated load with ±10% changing in input voltage. | See Chart of Description | | | |
| Load Regulation | 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. | See Chart of Description | | | |
| Turn-on Delay | Time required for initial output voltage stabilization | 0.3 | | 6 | Sec |

## 4. Interface Signals and Internal Protection

| Parameter | Conditions/Description |
|---|---|
| Power On/Off | The power supply will be turned on when the power On/Off pin is connected to secondary GND. |
| 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. |
| 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. |

## 5. Safety Approvals, EMI and EMS Specification

| Parameter | Conditions/Description | Min. | Nom. | Max. | Units |
|---|---|---|---|---|---|
| Approvals | UL 60950-1, 2nd Edition, 2007-03-27 | | UL approved | | |
| | CSA C22.2 No. 60950-1-07, 2nd Edition, 2007-03 | | cUL approved | | |
| | IEC 60950-1: 2005+A1: 2009 2nd | | UL approved | | |
| | EN 60950-1: 2006+A1: 2010 2nd | | CE approved | | |
| Hi-Pot | Input to output | 3000 | | | VAC |
| EMI | EN 55022 / CISPR 22 & FCC Part 15 | B | | | Class |
| PFC | EN 61000-3-2 & EN 610003-3 | D | | | |
| EMS | IEC 61000-4-2, 8KV air discharge and 6KV contact discharge | 3 | | | |
| | IEC 61000-4-3, 3V/M | 3 | | | |
| | IEC 61000-4-4, 2KV line & PE | 3 | | | |
| | IEC 61000-4-5, 2KV | 3 | | | Level |
| | IEC 61000-4-6, 10V | 3 | | | |
| | IEC 61000-4-8, 10A/M | 3 | | | |
| | IEC 61000-4-11 | | | | |

## 6. Environment Specification

| Parameter | Conditions/Description | | Min. | Nom. | Max. | Units |
|---|---|---|---|---|---|---|
| Operating Temperature | Derate linearly above 50°C by 2.5% per °C to a maximum temperature of 70°C without airflow. | At 100% load: | 0 | | 50 | °C |
| | | At 50% load: | 0 | | 70 | |
| | No derating with 21.5CFM forced air-cooling up to maximum temperature of 70°C. | At 100% load | 0 | | 70 | |
| Storage Temperature | Non-condensing. | | -40 | | +70 | °C |
| Relative Humidity | Non-condensing. | | 5 | | 95 | %RH |
| Altitude | Operating | | | | 5K | M |
| (Design to meet) | Non-operating | | | | 5K | |

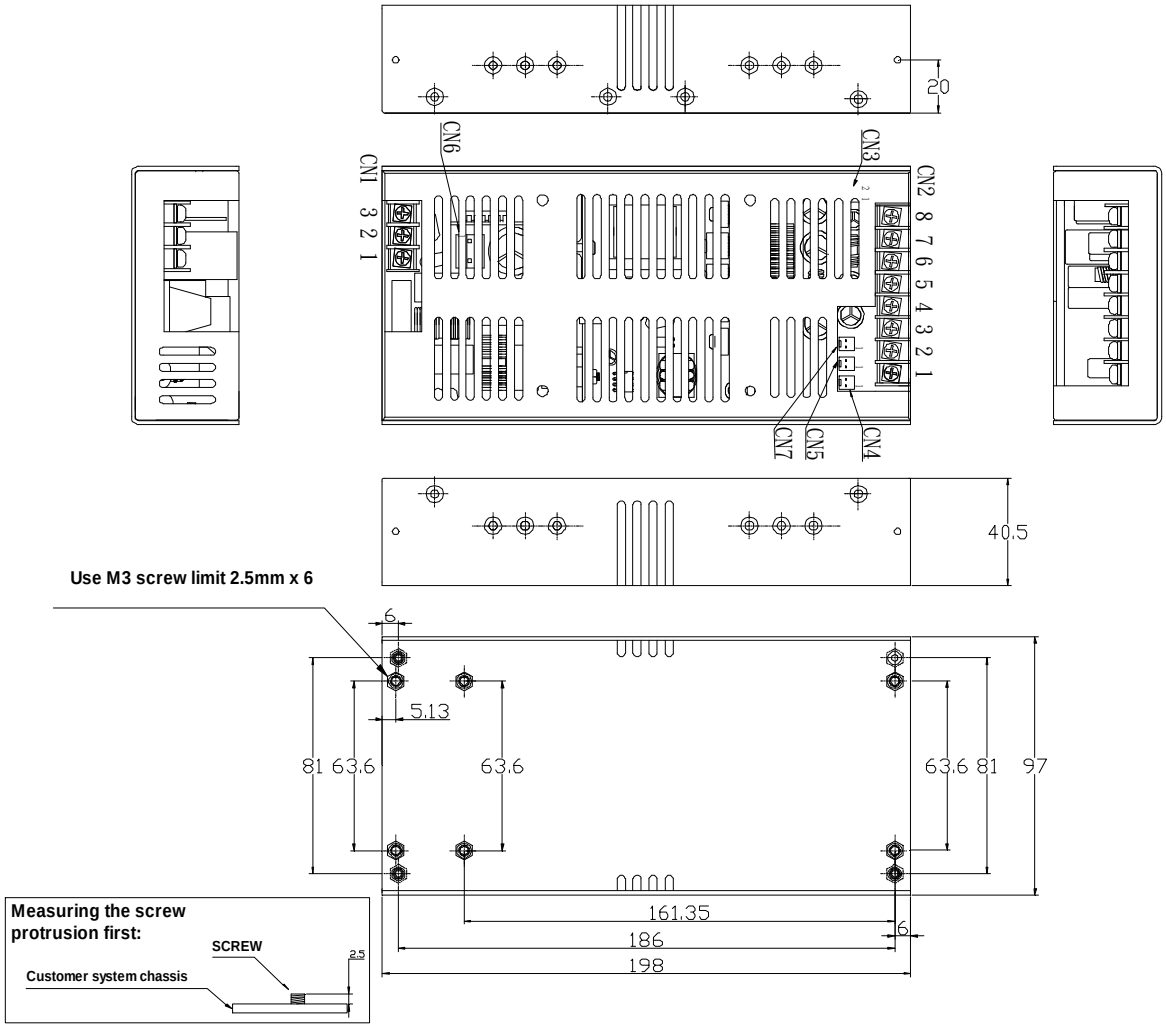
## 7. Mechanical Specification

| 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 | |

## 8. Options

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

# Mechanical



FAN position diagram