

## MPD SERIES

### FEATURES

- Design comply with IEC 60601-1 and IEC 60950-1
- BF Class insulation
- High efficiency meet 80PLUS GOLD.
- Design meet INTEL 「Haswell」 platform requirement
- High altitude 5000 meters operation



### SAFETY STANDARD APPROVAL



### DESCRIPTION

This series of AC/DC switching power supplies in a standard ATX form factor 140 x 150 x 86 mm are capable of delivering 400 or 500 watts continuous power. PSU build in DC/DC converter at +3.3V and +5V output rails to enhance load regulation.

### INPUT SPECIFICATIONS

|                        |   |
|------------------------|---|
| Input voltage:         | 90-264 VAC  |
| Input frequency:       | 47-63 Hz  |
| Input current:         |   |
| FSP400-70MPE:          | 5 A (rms) @115Vac, 60Hz<br>2.5 A (rms) @ 230Vac, 50Hz |
| FSP500-70MPE:          | 6 A (rms) @115Vac, 60Hz<br>3 A (rms) @ 230Vac, 50Hz   |
| Earth leakage current: | 300 µA max. @ 264 VAC, 63 Hz                          |

### OUTPUT SPECIFICATIONS

|                         |  |
|-------------------------|--|
| Output voltage/current: | See rating chart.                                    |
| Maximum output power:   | See rating chart.                                    |
| Ripple and noise:       | See rating chart                                     |
| Protection              |  |
| OVP:                    | +3.3V, +5V & +12V, Latch off                         |
| OCP, Shorted:           | +3.3V, +5V & +12V, Latch off<br>-12V, -5V, Latch off |
| OTP                     | +5Vsb, Auto-recovery<br>Latch off                    |

### ENVIRONMENTAL SPECIFICATIONS

|                        |   |
|------------------------|---|
| Operating temperature: | 0°C to +50°C  |
| Storage temperature:   | -20°C to +80°C  |
| Relative humidity:     | 10% to 95% non-condensing                             |
| Derating:              | Derate from 100% at +50°C linearly to 50%<br>at +70°C |

### GENERAL SPECIFICATIONS

|                                |  |
|--------------------------------|--|
| Power factor:                  | 0.9 minimum  |
| Efficiency:                    | Meet 80PLUS GOLD (87%, 90%, 87%)   |
| Hold-up time:                  | 12 mS minimum at 115VAC<br>17 mS minimum at 230 VAC  |
| Line regulation:               | ±1% maximum at full load   |
| Inrush current:                | 50 A @115 VAC at 25°C cold start<br>100 A @ 230 VAC at 25°C cold start   |
| Withstand voltage:             | 4000 VAC from input to output (2 MOPP)<br>1500 VAC from input to ground (1 MOPP)<br>1500 VAC from output to ground |
| MTBF:                          | 100,000 hours at full load & 25°C ambient, calculated<br>per MIL-HDBK- 217   |
| Fan acoustic noise             | 21 dB @ 250W, 33 dB @ 500W   |
| EMC Performance (IEC60601-1-2) |  |
| EN55011:/ EN55022              | Class B conducted, Class B radiated  |
| FCC / VCCI:                    | Class B conducted, Class B radiated  |
| EN61000-3-2:                   | Harmonic distortion, Class D   |
| EN61000-3-3:                   | Line flicker   |
| EN61000-4-2:                   | ESD, ±8 KV air and ±6 KV contact   |
| EN61000-4-3:                   | Radiated immunity, 10 V/m  |
| EN61000-4-4:                   | Fast transient/burst, ±2 KV  |
| EN61000-4-5:                   | Surge, ±1 KV diff., ±2 KV com.   |
| EN61000-4-6:                   | Conducted immunity, 10 Vrms  |
| EN61000-4-8:                   | Magnetic field immunity, 30 A/m  |
| EN61000-4-11:                  | Voltage dip immunity,<br>30% reduction for 500 ms,<br>60% reduction for 100 ms<br>>95% reduction for 10 ms         |

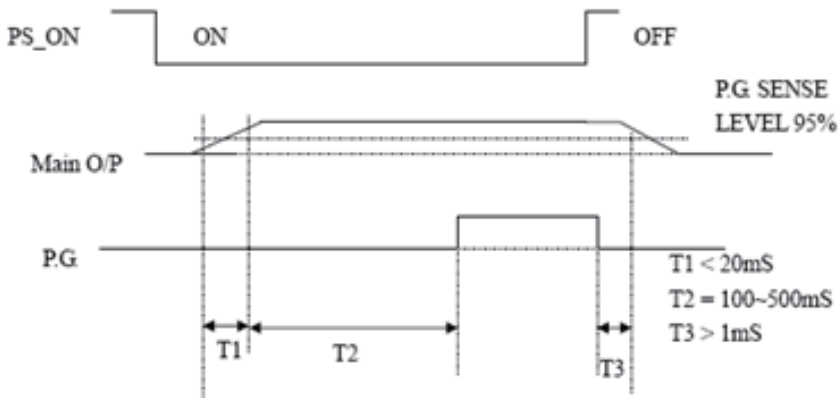
## OUTPUT VOLTAGE/CURRENT RATING CHART

| Rating<br>Outputs                  | FSP400-70MPD |            | FSP500-80MPD |            | Load Regulation | Ripple & Noise |
|------------------------------------|--------------|------------|--------------|------------|-----------------|----------------|
|                                    | Mini. Load   | Mini. Load | Mini. Load   | Mini. Load |                 |                |
| +3.3 V                             | 0.1 A        | 21 A       | 0.1 A        | 24A        | ±5%             | 50 mV P-P      |
| + 5 V                              | 0.1 A        | 18 A       | 0.1 A        | 20 A       | ±5%             | 50 mV P-P      |
| +12 V1                             | 0.2 A        | 18 A       | 0.2 A        | 16 A       | ±5%             | 120 mV P-P     |
| +12 V2                             | 0.05A        | 18 A       | 0 A          | 16 A       | ±5%             | 120 mV P-P     |
| +12 V3                             | -            | -          | 0.1 A        | 16 A       | ±5%             | 120 mV P-P     |
| - 5 V *1                           | 0 A          | 0.2 A      | 0 A          | 0.2 A      | ±10%            | 100 mV P-P     |
| -12 V                              | 0 A          | 0.5 A      | 0 A          | 0.5 A      | ±10%            | 120 mV P-P     |
| +5 Vsb                             | 0 A          | 3 A        | 0 A          | 3 A        | ±5%             | 50 mV P-P      |
| +3.3 V & +5 V Combine Output Power | 120W Maxi.   |            | 130W Maxi.   |            |                 |                |
| +12V Total Output Power            | 29A Maxi.    |            | 38A Maxi.    |            |                 |                |
| Total Output Power                 | 400W         |            | 500W         |            |                 |                |

**NOTES:**

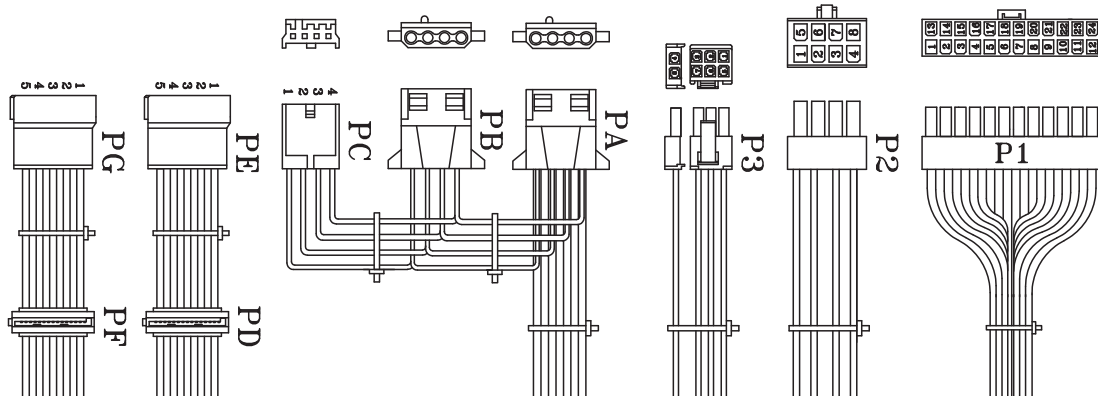
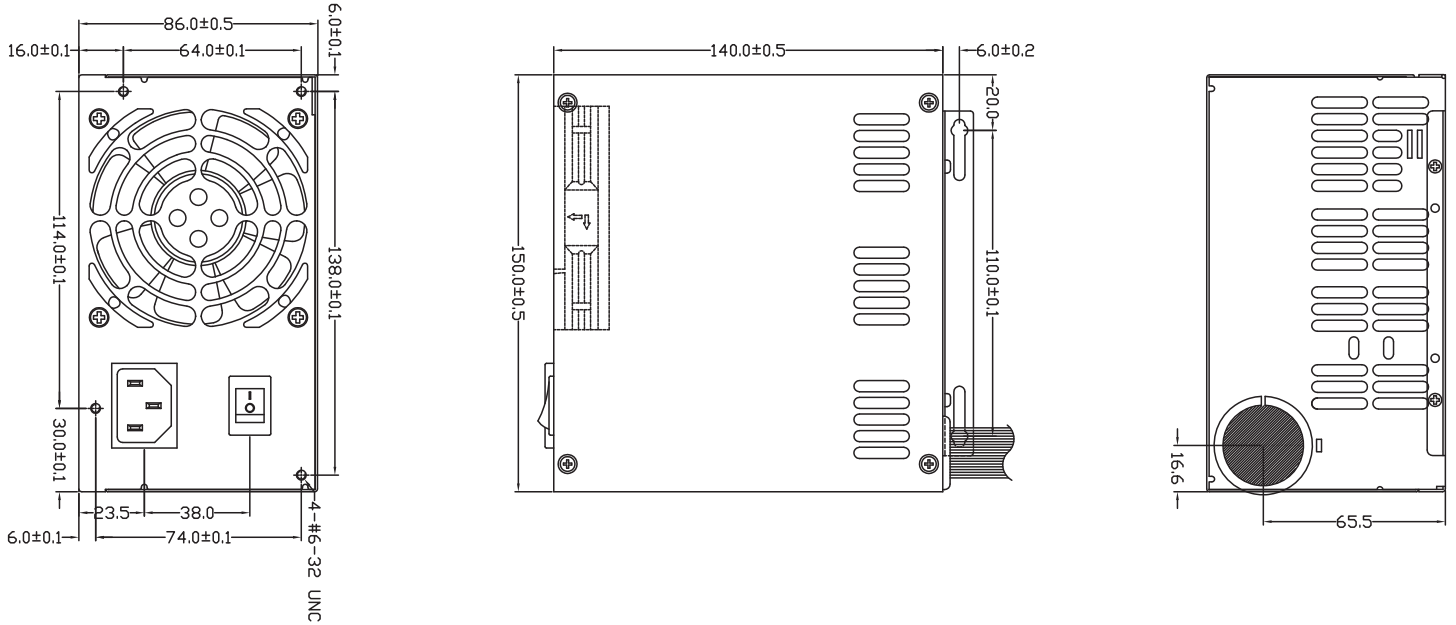
1. Optional -5V output is upon request but not included at standard model.

## INTERFACE SIGNALS



1. T1 : RISE TIME < 20 Ms
2. T2 : POWER GOOD DELAY TIME 100 ~ 500 mS
3. T3 : POWER FAIL DELAY TIME > 1 mS

## MECHANICAL SPECIFICATIONS



| No.         | Output connectors   | Cable Length   | Connector No. | Output connectors (equivalent)      |
|-------------|---------------------|----------------|---------------|-------------------------------------|
| P1          | Mother board 24 pin | 500 mm         | 1             | MOLEX 39-01-2240                    |
| P2          | CPU 8 pin           | 500 mm         | 2             | MOLEX 39-01-2080                    |
| P3          | PCI-e 6+2 pin       | 500 mm         | 1             | WST P8-I42002K21B-B                 |
| PD,PE,PF,PG | SATA                | 500+150 mm     | 2 + 2         | MOLEX SD-67926-0011 + SD-67582-0011 |
| PA, PB, PC  | PATA + Floppy con.  | 500+150+150 mm | 1 + 1 + 1     | AMP 1-480424-0 + AMP 171822-4       |

Weight: 1.8Kg