

Casing Macron Technology Co., Ltd.

SPECIFICATIONS FOR 400W ATX SWITCHING POWER SUPPLIES

MODEL: MPT-401P

DATE: 2004/08/18

REV: A2 (ATX12V)

CHECK BY: Rocky Lo

GENERAL REQUIRMENTS

This specification describes the requirements of 400 watts switching power supply. With 5V stand-by remote ON/OFF control for ATX form factor system and PFC (Power Factor Correction) circuit at 230Vac.

TABLE OF CONTENTS	PAGE
1. INPUT REQUIREMENTS	3
1-1 AC INPUT VOLTAGE	
1-2 AC INPUT FREQUENCY	
1-3 AC INPUT CURRENT	
1-4 MAXIMUM INRUSH CURRENT	
2. OUTPUT REQUIREMENTS	3
2-1 VOLTAGE	
2-2 RIPPLE & NOISE	
2-3 LINE REGULATION	
2-4 TOLERANCE	
2-5 OUTPUT VOLTAGE	
2-6 MAXIMUM CURRENT	
2-7 MINIMUM CURRENT	
2-8 +3.3V & +5V MAX WATTS	
2-9 OUTPUT RIPPLE DEFINITION	
3. PROTECTION	3
3-1 SHORT CIRCUIT PROTECTION	
3-2 OVER POWER PROTECTION	
3-3 OVER VOLTAGE PROTECTION	
3-4 OVER LOAD PROTECTION	
3-5 NO LOAD OPERATION	
4. OVERALL PERFORMANCE	4
4-1 TOTAL OUTPUT POWER	

4-2	EFFICIENCY	
4-3	HOLD UP TIME	
4-4	STABILITY	
4-5	POWER GOOD	
4-6	REMOTE ON/OFF CONTROL	
4-7	OVERSHOOT	
5.	TIMING/CONTROL	5
6.	ENVIRONMENTAL CONDITIONS	6
6-1	OPERATING TEMPERATURE	
6-2	COOLING	
6-3	STORAGE TEMPERATURE	
6-4	STORAGE HUMIDITY	
6-5	VIBRATION	
7.	SAFETY STANDARD	6
7-1	UL	
7-2	TUV	
7-4	NEMKO	
7-5	CB	
8.	ELECTROMAGNETIC COMPATIBILITY (EMC)	6
8-1~8-9	CE	
8-10	FCC	
8-11	BSMI	
9.	DIELECTRIC WITHSTAND VOLTAGE	7
10.	INSULATION RESISTANCE	
11.	GROUND LEAKAGE CURRENT	7
12.	RELIABILITY	7
12-1	MTBF	
13.	DC OUTPUT WIRE CONFIGURATION	8-9
13-1	MAIN POWER CONNECTOR 20PIN	
13-2	AUX POWER CONNECTOR 6PIN	
13-3	+12V POWER CONNECTOR (CPU) 4PIN	
13-4	HDD/CD ROM CONNECTOR 4PIN	
13-5	FLOPPY CONNECTOR 4PIN	
13-6	SATA CONNECTOR 5PIN(OPTION)	
14.	CHASSIS MECHANICAL DIMENSION AND WIRE LENGTH	10
15.	SPECIAL ORDER	11

1. INPUT

1-1	AC INPUT VOLTAGE	200 TO 264 VAC
1-2	AC INPUT FREQUENCY	50 HZ
1-3	AC INPUT CURRENT	4.5A RMS MAX. FOR 230 VAC
1-4	MAXIMUM INRUSH CURRENT	80A FOR 220 VAC COLD START

2. OUTPUT

		OUTPUT 1	OUTPUT 2	OUTPUT 3	OUTPUT 4	OUTPUT 5	OUTPUT 6
2-1	VOLTAGE	+5V DC	-5V DC	+12V DC	-12V DC	+3.3V DC	+5V SB
2-2	RIPPLE & NOISE	50mV	100mV	120mV	120mV	50mV	50mV
2-3	LINE REGULATION	±1%	±1%	±1%	±1%	±1%	±1%
2-4	TOLERANCE	±5%	±10%	-5+7%	±10%	±5%	±5%
2-5	OUTPUT VOLTAGE	4.75~5.25	-4.50~-5.5	11.4~12.8	-10.8~-13.2	3.14~3.46	4.75~5.25
2-6	MAXIMUM CURRENT	35A	0.5A	20A	0.8A	22A	3A
2-7	MINIMUM CURRENT	1A	0A	0.3A	0A	0.2A	0A
2-8	+3.3V & +5V 210W MAX.						

2-9 OUTPUT RIPPLE DEFINITION

The ripple voltage of the output shall be measured at the pins of the output connector when terminated in load impedance specified in Sec 2.

Ripple and noise are measured at the connectors with a 0.1uF ceramic capacitor and a 10 uF electrolytic capacitor to simulate system loading.

3. PROTECTION

3-1 SHORT CIRCUIT PROTECTION

The power supply shall shutdown and latch off for shorting +5V, +12V,+3.3V,-5V,-12Vrails.

The main output short circuit of any impedance shall less than 0.05 ohms.

3-2 OVER POWER PROTECTION

The power supply will be shutdown and latch off when total power over 110%~150% of rated DC output.

Notes:5VSB will be auto-recovery when the fault removed.

3-3 OVER VOLTAGE PROTECTION

The power supply shall provide latch-mode over voltage protection as define in below

+12V=13.4V~15.6V, +5V=5.7V~7.0V, +3.3V=3.7V~4.3V

3-4 OVER LOAD PROTECTION

There shall be protection from an output over current event. The supply may shutdown form such an event and require power on restart. Testing consists of application of the listed over current value with maximum load on all other outputs.

Over current test values:

+5V : 60A maximum

+12V : 35A maximum

+3.3V : 50A maximum

3-5 NO LOAD OPERATION

No damage or hazardous will occur with any output disconnected from load.

4. OVERALL PERFORMANCE

4-1 TOTAL OUTPUT POWER

400W continue maximum at full load.

4-2 EFFICIENCY

65% minimum at normal AC input voltage and full load.

4-3 HOLD UP TIME

14mS at maximum load and normal AC input voltage.

4-4 STABILITY

+/-0.5% after 24 hours warm up.

4-5 POWER GOOD

TTL compatible signal out with 100 mS to 500 mS delay after power setup,
Power good signal turn to low at least 1 mS before +5V drop below 4.75V.

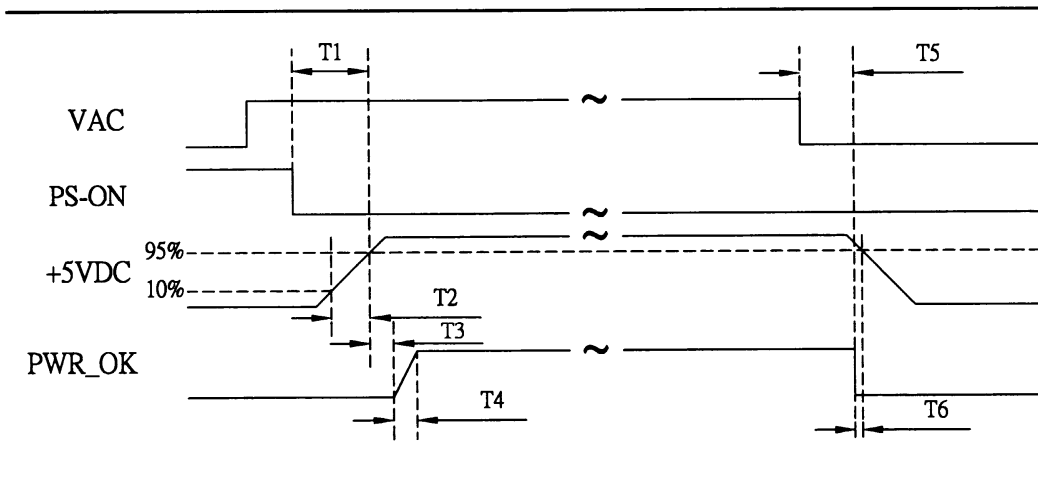
4-6 REMOTE ON/OFF CONTROL

When the logic level “PS-ON” is low, the DC outputs are to be enabled.
When the logic level “PS-ON” is high or open collector, the DC outputs are to be disabled.

4-7 OVERSHOOT

Any overshoot at turn on or turn off shall be less 10% of the normal voltage value on all DC outputs.

5. TIMING/CONTROL



- T1 : POWER ON TIME ($T1 < 500MS$)
- T2 : RISE TIME ($0.1MS \leq T2 \leq 20MS$)
- T3 : PWR_OK DELAY ($100MS < T3 < 500MS$)
- T4 : PWR_OK RISE TIME ($T4 \leq 10MS$)
- T5 : HOLD UP TIME ($T5 \geq 14MS$)
- T6 : POWER DOWN WARNING ($T6 \geq 1MS$)

6. ENVIRONMENTAL CONDITIONS

6-1	OPERATING TEMPERATURE	0 TO 40 DEGREE C
6-2	COOLING	TEMPERATURE CONTROLLER
6-3	STORAGE TEMPERATURE	-40°C TO+ 70°C
6-4	STORAGE HUMIDITY	OPERATING TO 85% RELATIVE HUMIDITY NON-OPERATING TO 95% RELATIVE HUMIDITY
6-5	VIBRATION	1.0GRMS,IRIENTATION:X,Y,Z(3 AXES) 30 MIN. IN EACH AXIS FREQUENCY:5~500Hz

7. SAFETY STANDARD

7-1 Underwrites Laboratory (UL) recognition.

The power supply designed to meet UL 1950

7-3 The power supply must bear the German Bauart Mark from TUV.

7-4 NEMKO certified by any Nordic Deviations.

7-5 CB test report to meet IEC 60950.

1991+A1:1992+A2:1993 +A3:1995+A4:1996 2ND

8. ELECTROMAGNETIC COMPATIBILITY (EMC)

8-1 EN 55022 Class B 1998 Conducted and Radiated

8-2 EN 61000-4-2 1995 ESD

8-3 EN 61000-4-3 1995 RS

8-4 EN 61000-4-4 1995 EFT/Burst

8-5 EN 61000-4-5 1995 Surge

8-6 EN61000-4-6 1996 Injected Current

- 8-7 EN 61000-4-8 1994 Power Magnetic
- 8-8 EN 61000-4-11 1994 Voltage Dips
- 8-9 EN 60555-2 1991 Harmonic
- 8-10 The 47 CFR, Part 2 and Part 15 of FCC Rules
Test procedures: ANSI C63.4 1992
- 8-11 BSMI (CNS 13438)

9. DIELECTRIC WITHSTAND VOLTAGE

9-1	INPUT TO GROUND	2121 VDC 1 min 10 mA
9-2	INPUT TO OUTPUT	4242 VDC 1 min 10 mA

10. INSULATION RESISTANCE

10-1	INPUT TO GROUND	>50 M Ω MINIMUM
10-2	INPUT TO OUTPUT	>50 M Ω MINIMUM

11. GROUND LEAKAGE CURRENT

The power supply ground leakage current shall be less than 3.5mA.

12. RELIABILITY

12-1 MEAN TIME BETWEEN FAILURE:

The demonstrated MTBF shall be 30000 hours of continuous operation at 25 DC Full load, 80% confidence limit and normal line. The MTBF of the power supply shall be calculation in accordance with MIL-STD-217D/E. The DC FAN is not included.

13. DC OUTPUT WIRE CONFIGURATION

13-1 MAIN POWER CONNECTOR 20PIN

PIN	OUTPUT	COLOR	COLOR	OUTPUT	PIN
1	+3.3VDC	PUPPLE	PURPLE	+3.3V DC	11
2	+3.3VDC	PUPPLE	BLUE	-12V DC	12
3	COM	BLACK	BLACK	COM	13
4	+5VDC	RED	GRAY	PS-ON	14
5	COM	BLACK	BLACK	COM	15
6	+5VDC	RED	BLACK	COM	16
7	COM	BLACK	BLACK	COM	17
8	POK	ORANGE	WHITE	-5V DC	18
9	+5Vsb	BROWN	RED	+5V DC	19
10	+12V DC	YELLOW	RED	+5V DC	20

13-2 AUX POWER CONNECTOR 6PIN (OPTION)

PIN	OUTPUT	COLOR
1	COM	BLACK
2	COM	BLACK
3	COM	BLACK
4	+3.3VDC	PUPPLE
5	+3.3VDC	PUPPLE
6	+5VDC	RED

13-3 +12V POWER CONNECTOR (CPU) 4PIN

PIN	OUTPUT	COLOR	COLOR	OUTPUT	PIN
1	COM	BLACK	YELLOW	+12V	3
2	COM	BLACK	YELLOW	+12V	4

13-4 HDD/CD ROM CONNECTOR 4PIN

PIN	OUTPUT	COLOR
1	+12V	YELLOW
2	COM	BLACK
3	COM	BLACK
4	+5V	RED

13-5 FLOPPY CONNECTOR 4PIN

PIN	OUTPUT	COLOR
1	+12V	YELLOW
2	COM	BLACK
3	COM	BLACK
4	+5V	RED

13-6 SERIAL ATA POWER CONNECTOR 5WIRE (OPTION)

WIRE	OUTPUT	COLOR
5	+3.3VDC	PUPPLE
4	COM	BLACK
3	+5VDC	RED
2	COM	BLACK
1	+12VDC	YELLOW