



MODEL NO:KINGCRAFT 1000 SPECIFICATION

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1. GENERAL

This specification describes the performance characteristic of a 1000W ATX power supply module with +3.3V,+5V,+12V,-12V main DC outputs, and 5V standby outputs.

2. ELECTRICAL PERFORMANCE

2.1. AC power Input

2.1.1. Input voltage and frequency

The total output power should not exceed 900W when input operating voltage is less than 100Vac.

	Minimum	Nominal	Maximum	Units
Range 1	90	115	132	Vrms
Range 2	180	230	264	Vrms

Table 1– Input voltage range

	Minimum	Nominal	Maximum	Units
Range 1	47	60	63	Hz
Range 2	47	50	53	Hz

Table 2– Input frequency range

2.1.2. Input current

Input current shall meet the limits shown in table 3.

Input voltage	Maximum input current	Maximum inrush current
Range 1	15 A	60 A _{peak}
Range 2	7 A	120 A _{peak}

Table 3 – Input current

Inrush current shall be measured after the power supply has been sitting for a minimum of ten minutes with the input voltage removed at an ambient temperature of 25°C .

2.1.3. Input current harmonics

The input current drawn on the power line shall not exceed the limits set by IEC-1000-3-2. When unit is operated at RANGE1 and 2 described in section 2.1.1.

2.1.4. Input power factor correction

Power factor shall be 115V/60Hz input voltage better than 0.98 output full load, or 230V/50Hz input voltage better than 0.93 output full load.

**MODEL NO:KINGCRAFT 1000 SPECIFICATION****2.1.5. Brownout**

The power supply shall not be damaged when AC input voltage is dropped below the minimum specified AC input voltage. Furthermore, when AC input voltage returns to normal, the power supply shall return to normal operation.

2.2. Signal input

The power supply shall have one TTL compatible signal inputs, *PSON.

2.2.1. Output on/off control

The power supply shall have a TTL compatible input for on/off control of the output voltages. This input shall be driven by an external signal, *PSON, referenced to the output voltage common. The external circuitry providing *PSON shall be capable of sinking 1.6 mA.

The output voltages shall turn on when *PSON is low (≤ 0.8 V). They shall turn off when *PSON is high (open). *PSON shall have no control over the auxiliary voltages.

2.3. DC output voltages

The power supply shall provide a total of eight DC output voltages. Seven of these voltages shall be controlled by the state of *PSON defined in section 2.2.1. The remaining one is an auxiliary voltage. It is energized whenever AC input within the range specified above is applied. The state of *PSON shall have no effect on this output.

2.3.1. Output current capacity

The voltage outputs shall be capable of supplying the output current shown in table 4 subject to:

- a. Total output power +5V, +3.3V combined should not exceed 150W.
- b. Total output power shall no more than 1000W.
- c. Maximum peak total DC output power should not exceed 1024W.
- d. Peak current loading on each +12V output shall be supported for a minimum of 15 second.
- e. Maximum combined current for the +12V1, +12V2, +12V3 and +12V4 outputs should not exceed 70A.



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Output	Nominal output (V _{dc})	Minimum	Maximum	Peak	Units	Conditions
1	3.3 V	0	28		A	
2	5 V	0	30		A	
3	+12 V1	0.5	20	26	A	
4	+12V2	0.5	20	26	A	
5	+12V3	1.0	20	26	A	
6	+12V4	0.5	20	26	A	
7	-12 V	0	0.5		A	
8*	+5 V _{sb}	0.1	3.5	4.0	A	

Table 4 – Output current capacity

* Output 8 is auxiliary outputs .

2.3.2. Regulation, ripple and noise

The power supply shall meet the regulation, ripple and noise parameters shown in table 5, subject to the cross loading conditions in section 2.3.1.

Output	Output voltage limits(V _{dc})			Ripple/noise
	Minimum	Nominal	Maximum	Maximum
1	3.17 V	3.30 V	3.46 V	50 mV _{p-p}
2	4.80 V	5.00 V	5.25 V	50 mV _{p-p}
3	11.52 V	12.00 V	12.60 V	120 mV _{p-p}
4	11.52V	12.00 V	12.60 V	120 mV _{p-p}
5	11.52V	12.00 V	12.60 V	120 mV _{p-p}
6	11.52V	12.00 V	12.60 V	120 mV _{p-p}
7	-11.40 V	-12.00 V	-12.60 V	120 mV _{p-p}
8	4.75 V	5.00 V	5.25 V	50 mV _{p-p}

Table 5 – Output voltage regulation

Output ripple and noise measurement shall be made using the following methods:

- a) Measurements made differentially (common mode noise subtracted from the measured voltage).
- b) Ground lead of oscilloscope probe ≤ 0.25 inch.
- c) Measurements made where the cable connectors attach to the load.
- d) Outputs bypassed at the point of measurement with the following:
All DC output use 47 uF electrolytic and 0.1 uF ceramic capacitors



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e) Oscilloscope bandwidth limited to 20 MHz when test ripple/noise.

2.3.3. Output voltage rise time

The rise time of all output voltages shall be between 1mS to 50mSec, measured from 10 % to 90 % on the leading edge of the voltage waveform.

2.3.4. Output voltage hold-up time

Upon loss of input voltage (at nominal), the output voltages shall remain in regulation for at least 17 msec.

2.3.5. Overshoot

Any output overshoot at turn on shall be less than 10% of the nominal output value. Any overshoot shall recover to within regulation in less than 50mS.

2.3.6. Transient response

The following shall apply to the 3.3V, 5V, and 12V outputs:

Output voltage shall recover to within 1 % of its static operating level ≤ 1 mS under the following conditions:

1. Load step from 75 % to 100 % to 75 % maximum load
2. Repetition rate of 10 mS with 50 % duty cycle
3. Current slew rate $\leq 1A/uS$.
4. Capacitive loads see table 6.

Output	Capacitive load
+3.3V	1000uF
+5V	1000uF
+12V1,+12V2,+12V3,+12V4	2200uF
+5Vsb	1uF

Table 6 – Transient capacitive load requirements

2.3.7. Capacitive Loads

The power supply should be able to power up and operate normally with the following capacitances simultaneously present on the DC outputs.

Output	+12VDC	+5VDC	+3.3VDC	-12VDC	+5V _{sb}
Capacitive load(uF)	11,000	12,000	12,000	350	350

Table 7 – Output capacitive loads



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2.3.8. Maximum load change

The power supply shall continue to operate normally when there is a step change ≤ 1 A/uS from minimum load to maximum load or maximum load to minimum load

2.3.9. Temperature coefficient

After operating for 30 minutes or longer at 25° C ambient, the output voltages shall change no more than ± 0.05 % per degree C.

2.3.10. Efficiency

The power supply efficiency measured at nominal input voltage (115 V or 230 V) and maximum load shall be ≥ 70 %.

2.3.11. Output protection

2.3.11.1. Short circuit protection

A short circuit on any output shall cause no damage to the power supply. A short circuit shall be defined as a resistance $\leq 0.01 \Omega$.

2.3.11.2. Over voltage protection

If the output exceeds the over voltage limits shown in table 8, the power supply shall turn off and remain off until the input voltage is disconnected and then reconnected.

Output	Nominal voltage	Over voltage limit
1	3.3 V	4.0 V +/- 10 %
2	5 V	6.2 V +/- 10 %
3	12 V	14.6 V +/- 10 %

Table 8 – Over voltage limits

2.3.11.3. Over current protection

+3.3V, +5V, +12V1, +12V2, +12V3, +12V4, output shall be equipped with over current protection. Their set point shall be between 110% to 150%.

2.3.11.4. Recovering from fault

The latch off state shall be cleared after the fault is removed and switching *PSON to high for \geq one second. It shall also be cleared after the fault is removed and removing AC power for ≥ 10 seconds.

2.3.11.5. Remote sensing

The power supply +3.3V,+5V and +12V3 output muse be able to correct for a voltage drop on connector , cable and PCB trace of 100mV minimum.



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2.4. Signal output

2.4.1. Power good

Power good shall be a TTL compatible signal capable of sinking 5 mA and sourcing 100 uA. Power good low shall be ≤ 0.4 V, and high shall be ≥ 3.0 V.

Power good shall change from low to high between 100 and 500mS after the 5 V and 3.3 V outputs attain a static operating level within their specified regulation parameters.

Power good shall change from high to low 1 msec before 5 V or 3.3 V output falls below its specified regulation parameter.

Power good rise time shall be less than 100uS with capacitive load ≤ 47 pF.

2.5. Fan speed control

The power supply shall contain a thermal sensing circuit capable of varying fan speed.

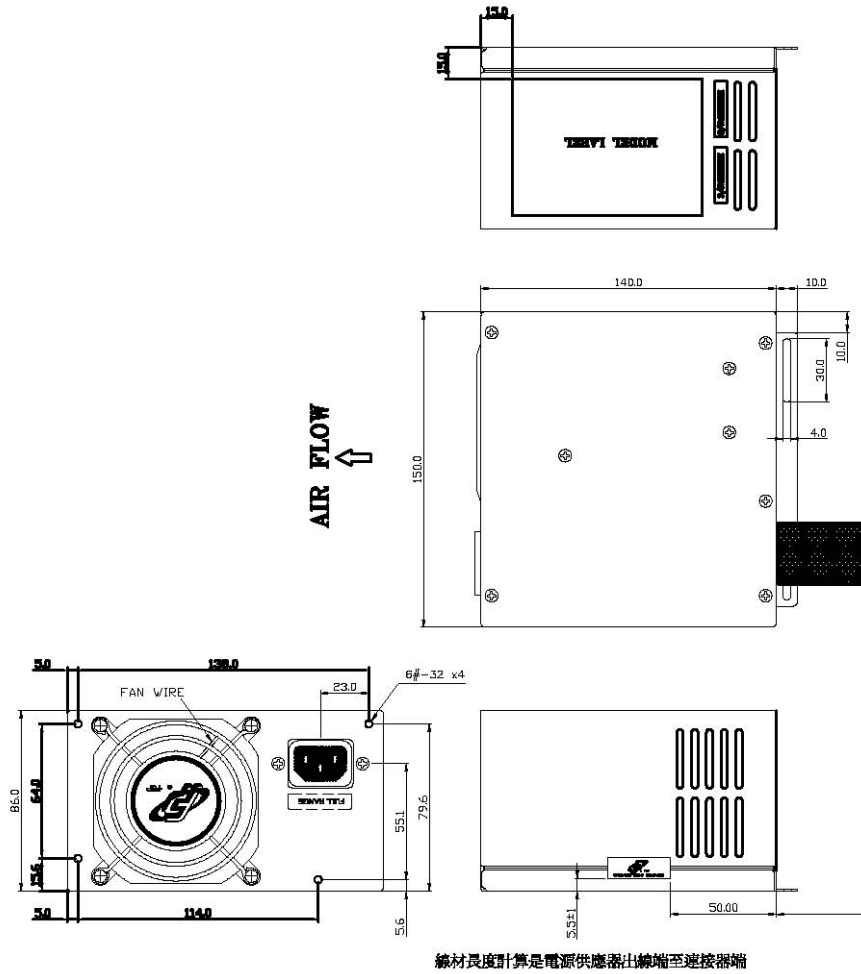
3. MECHANICAL

3.1. Dimension

The outside dimension, not including handle and output connector, shall be W150.0mm x H86.0mm x D140.0mm.



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3.2. AC input connector

The power supply shall have an internal IEC320 AC inlet.

**MODEL NO:KINGCRAFT 1000 SPECIFICATION****4.1. Temperature**

Operating: 0 to 40° C Max. output rating 850W at 115Vac
0 to 35° C Max. output rating 900W at 115Vac
0 to 25° C Max. output rating 1000W at 115Vac

Non-operating: -40 to 70° C

4.2. Humidity

Operating: 5 % to 90 % non-condensing
Non-operating: 5 % to 90 % non-condensing

4.3. Altitude

Operating: sea level to 7,000 feet
Non-operating: sea level to 40,000 feet

4.4. Shock

Operating: 5 g for 11 ms with a ½ sine wave for each of the perpendicular axes X, Y, and Z.
Non-operating: 30 g for 11 ms with a ½ sine wave for each of the perpendicular axes X, Y, and Z.

4.5. Vibration

Operating: 10 Hz to 500 Hz sweep at 0.5 g constant acceleration for one hour on each of the perpendicular axes X, Y, and Z.
Non-operating: 10 Hz to 300 Hz sweep at 2 g constant acceleration for one hour on each of the perpendicular axes X, Y, and Z.

4.6. Power line disturbance**4.6.1. Over voltage**

The power supply shall function with no interruption when line input is surged 15 % above nominal for one second. The verification of this shall be done 10 times with a 10 % duty cycle.

4.6.2. Under voltage

The power supply shall function with no interruption when line input is sagged 20 % below nominal for one second. The verification of this shall be done 10 times with a 10 % duty cycle.

5. REGULATORY**5.1. Safety certification**

The power supply shall have the certification approval for affixing UL, CUL, and TUV safety logos on power supply model label.



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5.1.1. Leakage current

Leakage current from power supply AC input to safety ground shall not exceed 3.5 mA at 240VAC/50Hz.

5.1.2. Dielectric with standing

The power supply shall withstand for 1 minute without break down an AC 1800V (30mA) applied between both input line and chassis.

5.2. Electromagnetic compatibility

5.2.1. EMI

The power supply, operating with resistive load, shall meet FCC Part 15, class B and EN55022 class B conducted limit, and must meet -6dB margin.

5.2.2. Surge immunity

The power supply shall comply with the surge voltage requirements of EN61000-4-5 level 3 (2 kV peak open circuit voltage from line/neutral to GND , and 1 kV from line to neutral).

5.2.3. Line noise disturbance

The power supply shall operate normally when installed in a computer system and subjected to power line noise described in EN61000-4-4, level 3 (2 kV open circuit voltage). The power supply shall not cause any failure in the host computer system during line noise testing.

5.2.4. ESD

In addition to IEC 801-2 and IEC61000-4-2, the following ESD tests shall be conducted. Each surface area of the unit under test shall be subjected to twenty (20) successive static discharges at each of the following voltages : 2kV, 3kV, 4kV, 5kV, 6kV, 7kV, 8kV.

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6. MISCELLANEOUS

6.1. Marking

6.1.1. Model label

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材質:銀底麥拉 尺寸:90X65 MM
 註:印刷材質須符合SPI環境管制
 與物質技術標準(SGP-0401)(環保材質)



AC Input 交流輸入		100-240 Vac 50-60Hz 15-7A							
DC Output 直流輸出	+3.3V	+5V	+12V1	+12V2	+12V3	+12V4	-12V	+5Vsb	
Max Output Current 最大電流	28A	30A	20A	20A	20A	20A	0.5A	3.5A	
Max Combined Power 最大功率	150W		840W(70A)				6W	17.5W	
Total Power 最大輸出功率	1000W								
WARNING!HAZARDOUS AREA SAFETY INSTRUCTIONS: DO NOT REMOVE THE COVER. NO SERVICEABLE COMPONENTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL. 警告!請勿打開盒蓋。內有危險高壓。請退回代理商維修。				CAUTION! HAZARDOUS AREA SAFETY INSTRUCTIONS: DO NOT REMOVE THE COVER NO SERVICEABLE COMPONENTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL. www.FSP-group.com				 RoHS Made in China	
 Tested to Comply With FCC Standards FOR HOME OR OFFICE USE		 E190414		 RELIABLE DESIGN TIME APPROVED					



6.2. Reliability

The mean time between failure figure, calculated per MIL-HDBK-217F at 25 °C ambient, nominal AC input and maximum load, shall be at least TBD hours excluding fan MTBF, and TBD hours including fan MTBF.

7. RESTRICTION OF HAZARDOUS SUBSTANCE (ROHS) IN ELECTRICAL

The directive 2002/95/EC of the European Parliament and of the Council of the 27th January 2003, on the restriction of the use of certain hazardous substances in electrical and electronic equipment, requires the reduction of the substances Lead, Mercury, Cadmium, Hexavalent Chromium, Polybrominated Biphenyls (PBB), and Polybrominated Diphenyl Ethers (PBDE) in electronic products by July 1, 2006. Unless otherwise noted, all materials used will be compliant with this directive and any subsequent revisions or amendments.

