

Change List

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HK950-52PP Specification

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1.0 Input Characteristics:

1.1 Input Voltage Range:

90 Vac to 264 Vac, single phase.

Table1. Input Voltage Range

RANGE	MINIMUM	NORMAL	MAXIMUM	UNITS
High Range	90	100~240	264	Vrms

1.2 Input Frequency Range:

Frequency Range: 47~63Hz

1.3 Input current

Maximum steady state input current shall be less than 14A RMS

1.4 Inrush current:

Power supply inrush current shall be less than the ratings of its critical components (including bulk rectifiers, fuses, and surge limiting device) under all conditions of line voltage of Section 1.1.

1.5 Power Efficiency:

	115V/60HZ	230V/50HZ
20% Loading (EFF)	>87%	>90%
50% Loading (EFF)	>90%	>92%
100% Loading (EFF)	>87%	>89%

For 产线不热机测试,所有 eff spec 放宽 2%

Efficiency test loading:

LOAD	+12V	+5V	+3.3V	-12V	+5VSB
100% load	58.5A	15A	15A	0.3A	2A

1.6 Power factor:

The power supply must use active PFC, PF≥0.90 @100% load at 230Vac/50Hz.

1.7 Standby Consumption

AC input power should not exceed 1W under +5VSB /0.05A, at 230Vac/50Hz.

1.8 Harmonic Current:

(1) The harmonic of the power line and neutral current shall comply the standard IEC61000-3-2 for class A equipment.

(2) Measurement shall be performed at 75W input power and full output load, Input voltage shall be 230Vac/50Hz, Don't test in process under low range.

2.0 Output Characteristics:

2.1 Static output characteristics:

Table2. Static output characteristics

Output Voltage	Load			Regulation	Ripple & Noise
	Min	Max	Surge		Max mV P-P
+5V	0.5A	30A		+/- 5%	50mV
+3.3V	0.5A	30A		+/- 5%	50mV
+12V	1A	70.8A		+/- 5%	120mV
+5VSB	0A	4A		+/- 5%	50mV
-12V	0A	0.6A		+/- 10%	200mV

At 25°C & 35°C

(1) The total combined +3.3V & +5V power shall not exceed 170W.

(2) The continuous output power shall not exceed 850W.

2.2 The cross-load regulation is defined in the matrix below (UNIT: A)

Table 3. Cross Regulation

Range	+5V	+3.3V	+12V	-12V	+5VSB
1	1	1	1	0	1
2	15	20	58.5	0.3	1
3	15	20	57	0.3	2.5
4	Stand-by	Stand-by	Stand-by	Stand-by	0
5	Stand-by	Stand-by	Stand-by	Stand-by	2.5
Peak load (Note)	15	20	70	0.3	3

Notes: A 0.1uF ceramic disk capacitor and 10uF tantalum capacitors should be put across output terminals during ripple & noise test. The oscilloscope bandwidth is set at 20 MHz and co-axial probe will be used to measure it.

Note B: the output voltage range will be +/-10%, and PSU shall not shut down when peak load test.

Notes C: Power supply can work with Peak load and there is no more electric test for Peak load.

Notes D: CPK of 3.3V cross-load regulation Calculation range will be +/-6%

2.3 Dynamic Load:

The following transient loads are to be applied to the output. The waveform shall be a square wave with the slope of the rise and fall at 0.5A/μs(-12V at 0.2A/μs). The square wave shall have a frequency 50Hz to 10KHz with a duty cycle of 10 to 90%.

The output voltages shall not exceed regulation limits as defined in Table 2 under the following condition:

TRANSIENT VOLTAGE TOLERANCE

Table4. Dynamic Load Step Sizes

OUTPUT	STEP LOAD	+12V	+5V	+3.3V	-12V	+5VSB	TRANSIENT TOLERANCE(%)
+12V	45~72A	*	1	1	0.2	1	+/-5
+5V	5~15A	37	*	20	0.2	3	+/-5
+3.3V	5~20A	58	15	*	0.2	3	+/-5
All	*	1~10	0.5~5	0.5~15	0~0.3	0~2.5	+/-5

- 1> Adding external capacitor: 5V/10000uF, 12V/10000uF, 3.3V/10000uF, -12V/350uF, 5Vaux/350uF
- 2> If Item <All> can't be tested at product line, it can be check at DQA lab when EVT&DVT stage
- 3> Dynamic test item CPK Calculation rang will be +/-10%

2.4 Capacitive Load:

The power supply should be able to power up and operate with the regulation limits defined in Table 2, with the following capacitances simultaneously present on the DC outputs.

Table5. Output Capacitive Loads

Output	Capacitive Load
+12V	10000μF
+5V	10000μF
+3.3V	10000μF
-12V	350μF
+5VSB	350μF

2.5 The power supply shall have the output connector and wire harness configurations.

3.0 Protection

3.1 Over Voltage Protection: use VR parallel to TL431 A,R

+5V: 7V max; +3.3V: 4.7V max; +12V :16V max,

3.2 Short Circuit Protection:

The main output shall shut down and latch off for shorting +5V, +12V, -12V or +3.3V rails to DC-return and shorting.

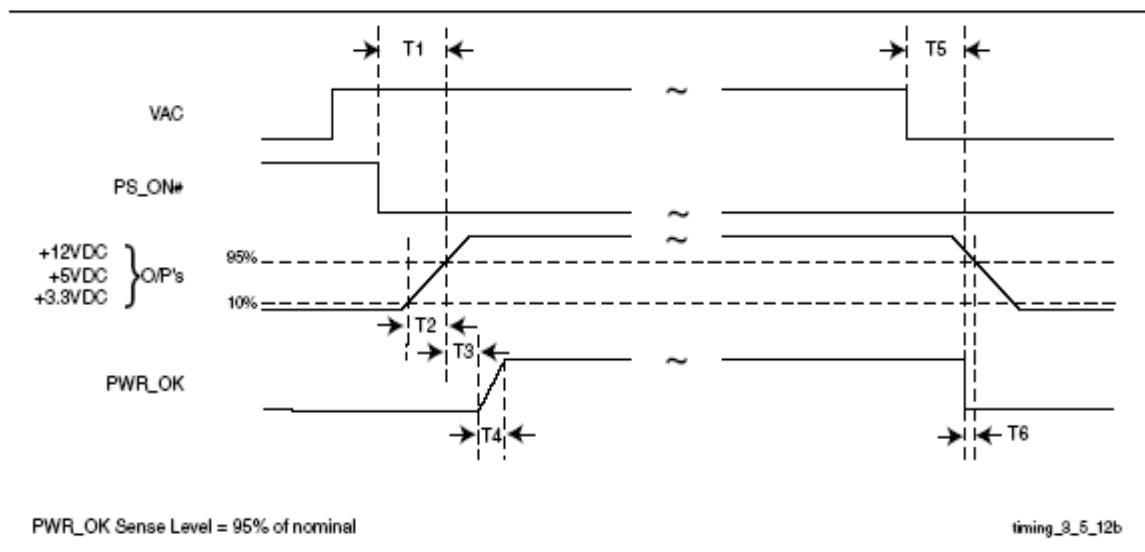
3.3 Over Power Protection:

NA , peak load test can cover it.

3.4 Reset after shutdown:

When the power supply latches into shutdown condition due to a fault on an output (over current, over voltage or short circuit), the protection latch shall reset within 60S after the fault has been removed and the ON/Off signal has switched state. Also, the latch shall reset within 60S when AC power has been removed.

4.0 Time Sequence



Power Supply Timing

4.1 Power-on time T1

The power-on time is defined as the time from when PS_ON# is pulled low to when the +12 VDC, +5 VDC, and +3.3 VDC outputs are within the regulation ranges specified in Section 2.1. The power-on time shall be less than 500 ms.

4.2 Rise time T2

The output voltages shall rise from $\leq 10\%$ of nominal to within the regulation ranges specified in Section 2.1 within 20 ms.

4.3 PWR_OK delay T3

The Power Good signal shall have a turn-on delay of at least 100mS but not greater than 500 mS from the time the 3.3V and +5V output has reached their minimum regulation level.

4.4 PWR_OK rise time T4

The Power Good signal shall have a rise time (measured from the 10% point to the 90% point) of less than 10 ms.

4.5 AC loss to PWR_OK hold-up time T5

The DC output level for 5V; 3.3V and 12V shall remain an up level at least 8msec after AC power is removed and the test condition: 220V/50HZ, 60% of full load.

4.6. Power Fail Delay Time T6

The Power _Down warning signal at least 0.5msec shall have a power Good Signal change Low Voltage to the 3.3V or +5V falls below their regulation limit. Test condition: 220V/50HZ, 60% of full load.

4.7 5V and 3.3V tracking

For reference @ Rise up and drop down

4.8 glitches

For reference @ Rise up and drop down

4.9 Power OK (POK)

The power supply shall provide a “Power Good” signal to reset system logic, indicate proper operation of the power supply, and give advance warning of impending loss of regulation at turn off.

The electrical characteristics for the Power OK output driver are shown below:

Table7. Power OK Signal Characteristics

Power OK Signal Characteristics	
Signal Type	+5V TTL Compatible
Logic Level Low	<0.4V while sinking 4mA
Logic Level High	Between 2.4V and 5.5V output while sourcing 200µA
High-State Output Impedance	1kΩ from output to common

4.10 PS-ON Signal

PS_ON is an active low, +5V tolerant TTL signal that allow the motherboard to remotely control the power supply. An internal pull-up resistor inside the power supply shall provide a TTL high output logic level, once an AC input voltage has been applied to the power supply. The electrical characteristics for the PS_ON signal are shown below:

Table8. PS-ON Signal Characteristics

PS-ON Signal Characteristics		
Signal Description	Min	Max
Input Low Voltage	0.0V	0.8V
Input Low Current (Vin=0.4V)	-	-1.6mA

Input High Voltage (Iin=-200μA)	2.0V	
VIH open circuit	-	5.5V

5.0 Auxiliary 5V Output:

The 5V auxiliary output will be active and in regulation whenever an AC input within the specified operating range is applied to the power supply input. The PS_ON pin of P1 will not affect the 5V auxiliary output.

6.0 Environment:

6.1 Operating ambient:

Table9. Operating ambient

Air Temperature	0 to 45 degrees centigrade
	100% of output power @Operate in 45°C
Relative Humidity	5 to 85 percent, non-condensing

6.2 Shipping and Storage:

Table10. Shipping and Storage

Air Temperature	-40 to 55 degrees centigrade
Relative Humidity	5 to 95 percent, including condensation

6.3 Altitude:

Operating to 5000 meters (16,404 ft)
 Non-operating to 15250 meters (50,000 ft).

6.4 Cooling:

The power supply shall provide forced air cooling for the host system.

6.5 Fan speed control

The power supply shall contain thermal sensing circuitry capable of varying fan speed
 Fan to switch off at less than 30~40% rated power.

7.0 Safety and EMC

7.1 SAFETY REQUIREMENTS AND Certify

The power supply has been certified by CCC & CE Safety mark shall appear on the product.

7.2 Conducted and Radiated Emissions:

Conducted and radiated emissions of the power supply shall comply with the requirements of EN55022 Class B. have 3db margin @ 230Vac/50HZ

7.3 ESD:

ESD of the power supply shall comply with the requirements of IEC61000-4-2 Level 4.

7.4 EFT:

EFT of the power supply shall comply with the requirements of IEC61000-4-4 Level 3.

7.5 Surge Susceptibility:

Surge Susceptibility of the power supply shall comply with the requirements of IEC61000-4-5 Level 3.

7.6 Hi-Pot:

Input to GND: Voltage 1800VAC Time 3.0S, Cut off current 10mA MAX

7.7 Grounding Continuity Test:

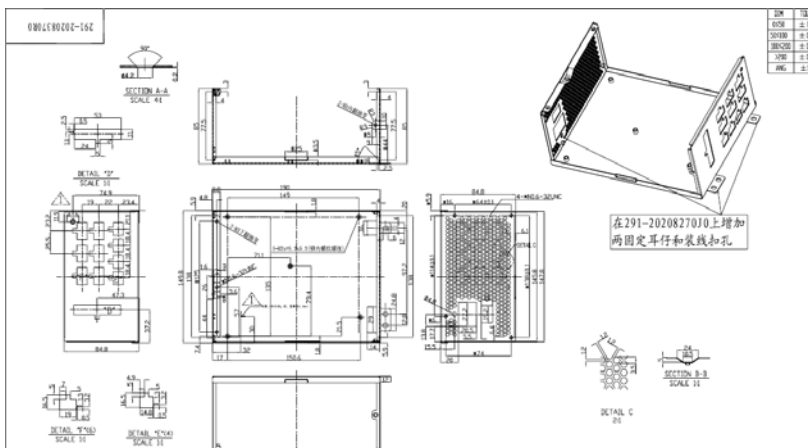
100mΩ MAX at 25.0A .

7.8 Ground Leakage Current:

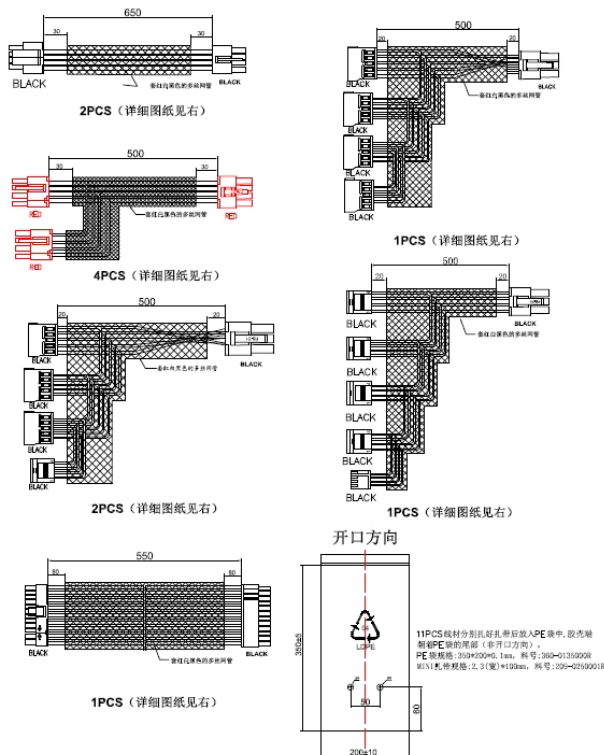
3.5mA MAX at 264V 50Hz

8.0 Mechanical:





8.1 Mechanical outline:



8.2 DC wire drawing













8.3 Label drawing

Model/型号: HK950-52PP
MVP K850
Switching power supply / 开关电源

AC INPUT 交流输入	100-240Vac, 50-60Hz, 10A				
DC OUTPUT 直流输出	+12V	+5V	+3.3V	-12V	+5VSB
	70.8A	30A	30A	0.6A	4.0A
	849.6W	170W		7.2W	20W
850W					

⚠ 警告：非专业维修人员请勿自行开启此盖！

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Your Super Game Platform Needs a Super Power Supply

Huntkey > News > Your Super Game Platform Needs a Super Power Supply

July 31, 2019 Huntkey Blog huntk3y_som0s

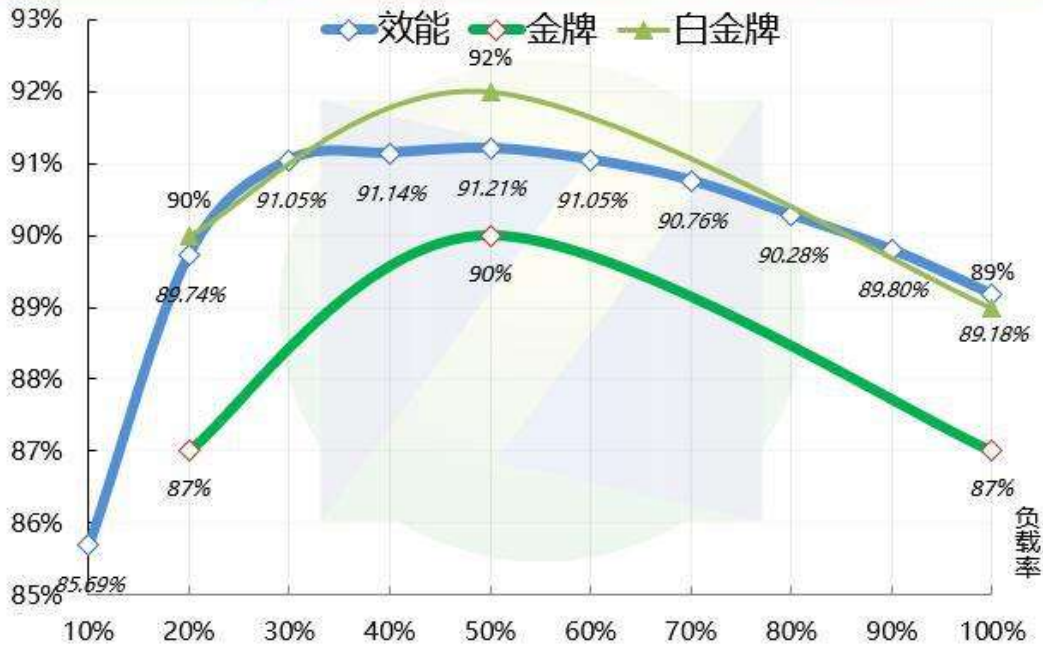
The new released super graphics card has already made many video game players eager to try. But you may need a super power supply before upgrading the hardware. With a super power supply, the super platform will performance more stable works.

We all know that qualified power supplies must have sufficient interfaces, certifications, and rated power. What kind of power supply can be called a super power supply?



First of all, the power supply must be able to meet the needs of the platform. A 400W or 500W power supply can't meet the needs. But if it is a 800W power supply, will definitely support for the dual-card platform, not to mention the single-card flagship platform.

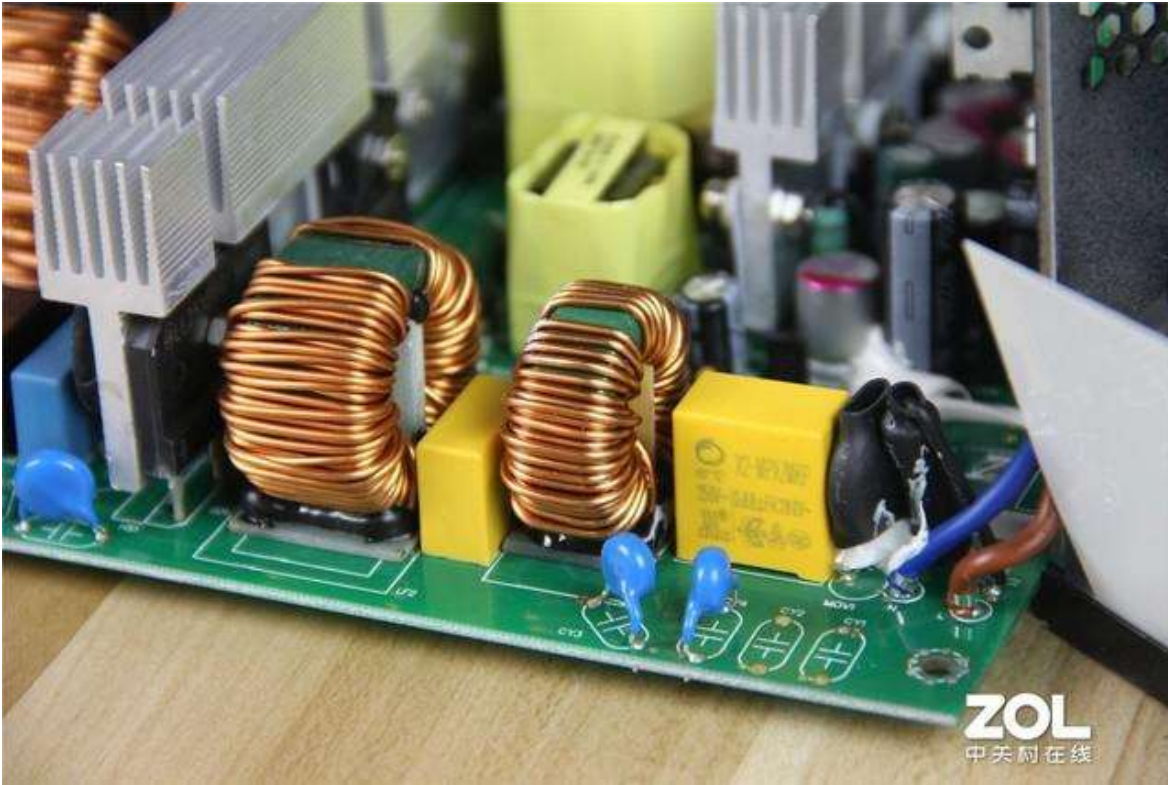
中关村在线 ZOL.COM.CN
电源实测转换效率
航嘉MVP K850电源



A super power supply must also be super power-saving. Huntkey MVP K850 for instance, the conversion efficiency can reach 90% at the typical loads (50%) situation. It is 10% higher than the power supplies that do not reach 80 PLUS. The higher conversion efficiency the more energy saving. And the users can save more money by that.



Besides power-saving, the internal design is also essential. Engineers usually have an overall consideration when they develop a high-end power supply. The active PFC + LLC resonant + DC toDC architecture is a common and a mature design. It has efficient and stable advantages .



A super power supply always uses more solid materials. The secondary EMI filter, the sufficient main capacitor can make the output voltage more stable, and also more friendly to the hardware. It is also a good way to protect the SUPER platform.



