

## HK700-51P<sup>P</sup> Specification

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**1.0 Input Characteristics:****1.1 Input Voltage Range:**

90Vac to 264Vac, 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: 50~60Hz

**1.3 Input current**

Maximum steady state input current shall be less than 10A RMS at 115VAC and 5A RMS at 230VAC with maximum load at 25°C.

**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:**

(1)

Min 87% efficiency under 20% full load condition, input Voltage: 115Vac/60Hz or 230Vac/50Hz

Min 90% efficiency under 50% full load condition, input Voltage: 115Vac/60Hz or 230Vac/50Hz

Min 87% efficiency under 100%full load condition, input Voltage: 115Vac/60Hz or 230Vac/50Hz

(2) PF is not less than 0.9 under 100% load with input voltage 100Vac-240Vac , 50Hz/60Hz.

Efficiency test loading

LOAD	+12V	+5V	+3.3V	-12V	+5VSB
100%	41A	11A	11A	0.3A	2.5A

**1.6 Power factor:**

The power supply must use a PFC, PF $\geq$ 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 D 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	0.3A	15A		+/- 5%	50mV
+12V	0.5A	45A		+/- 5%	120mV

+5VSB	0A	2.5A		+/- 5%	50mV
+3.3V	0.3A	15A		+/- 5%	50mV
-12V	0A	0.3A		+/- 10%	120mV

At 25°C&35°C

- (1) The total combined 3.3V&5V power shall not exceed 100W.
- (2) The continuous output power shall not exceed 600W.

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

**Table 3. Cross Regulation**

Range	+5V	+3.3V	+12V	-12V	+5VSB
1	0.3	0.3	1	0	0
2	15	7.5	40.5	0.3	2
3	10.1	15	40.5	0.3	2.2
4	5	5.72	45	0.3	2.5
5	11	11	41	0.3	0
6	5.5	5.5	20.5	0.15	1.25
7	11	11	41	0.3	2.5

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.

### 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	1~10A	N/A	0.3	0.3	0	0	+/-5
	36~45A	N/A	5	5.72	0.3	2.5	
	0.8~5.3A	N/A	0.3	0.3	0	0	+/-5
	33~37.5A	N/A	5	5.72	0.3	2.5	+/-5
+5V	0.3~4.8A	1	N/A	0.3	0	0	+/- 5
	10.5~15A	40.5	N/A	7.5	0.3	2	
+3.3V	0.3~4.8A	1	0.3	N/A	0	0	+/- 5
	10.5~15A	40.5	10.1	N/A	0.3	2.2	
-12V	0~0.15A	1	0.3	0.3	N/A	0	+/- 10
	0.15~0.3A	40.5	15	7.5	N/A	2	
+5VSB	0~1A	1	0.3	0.3	0	N/A	+/- 5
	1~2.5A	41	11	11	0.3	N/A	

(Adding external capacitor: 5V/10000uF, 12V/10000uF, 3.3V/10000uF, -12V/350uF, 5Vaux/350uF)

#### 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	10000 $\mu$ F
+5V	10000 $\mu$ F
+3.3V	10000 $\mu$ F
-12V	350 $\mu$ F
+5VSB	350 $\mu$ F

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

### 3.0 Protection

#### 3.1 Over Voltage Protection:

+5V:7V max, +12V: 15.6V max, +3.3V: 4.7V 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:

Any output shall not exceed requirement of the table. Otherwise, the unit would shut down.

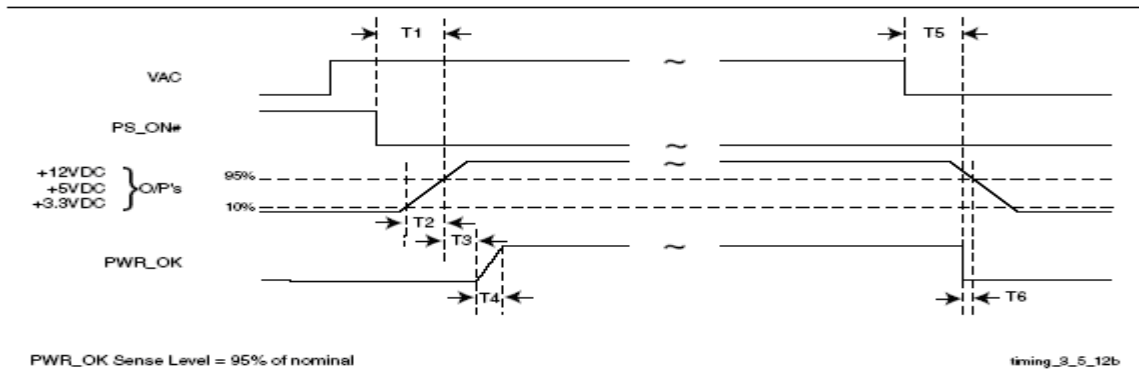
**Table6. Over Power Protection**

Input Voltage	115VAC/60Hz
OPP Range(Output Power)	660W~900W

#### 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 30S after the fault has been removed and the ON/Off signal has switched state. Also, the latch shall reset within 30S 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 0.1 ms to 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 5msec after AC power is removed and the test condition:115V/60HZ,80% 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:115V/60Hz or 230/50Hz, full load.

4.7 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 5V output while sourcing 200µA
High-State Output Impedance	1kΩ from output to common

#### 4.8 PS\_ON

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	-	5.25V

#### 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 35 degrees centigrade
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.

#### 7.0 Safety and EMC

##### 7.1 SAFETY REQUIREMENTS AND Certify

The power supply has been certified by CB, CE. The CB, 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.



**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:**

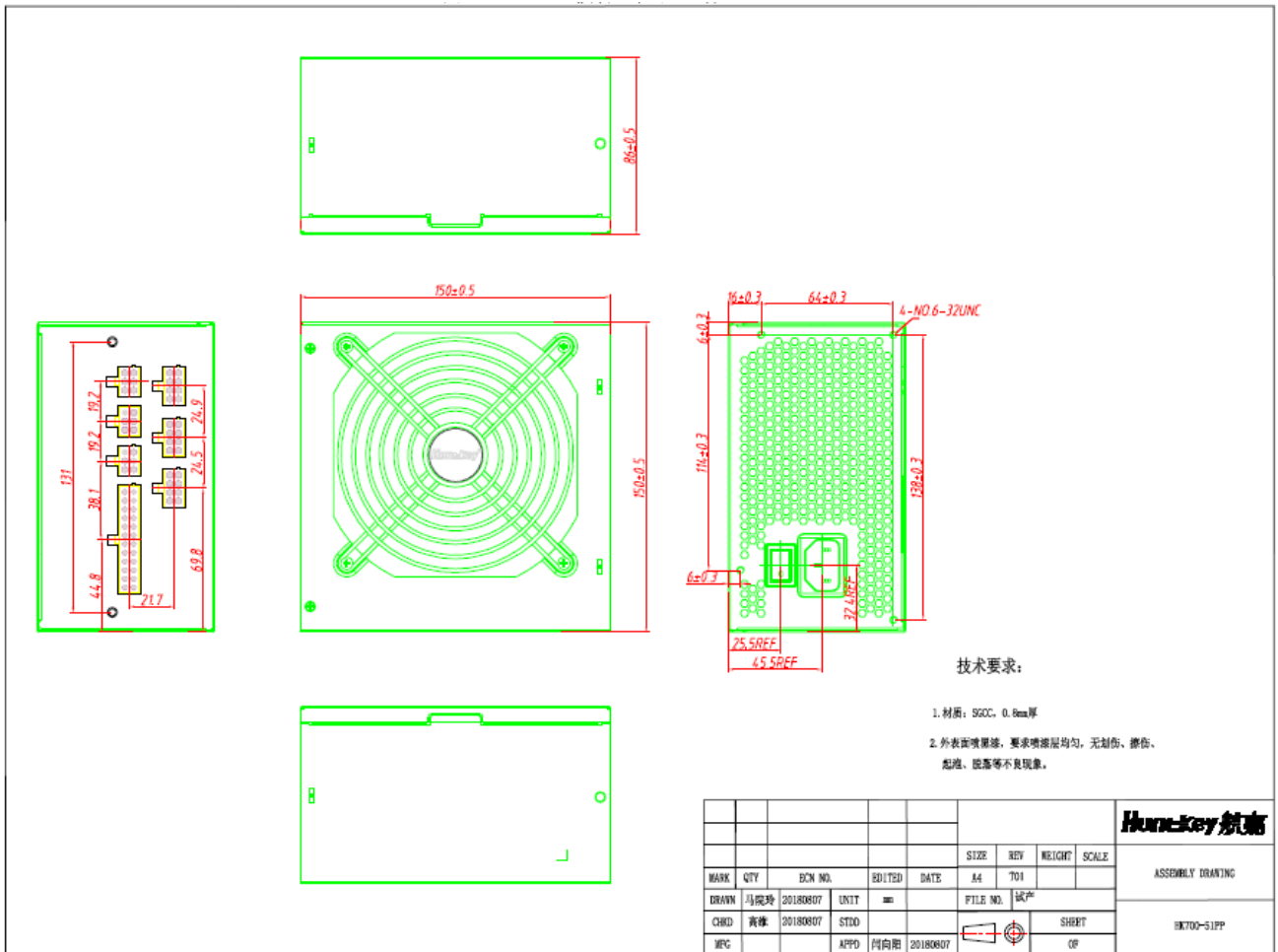
100mΩ MAX at 25.0A .

**7.8 Ground Leakage Current:**

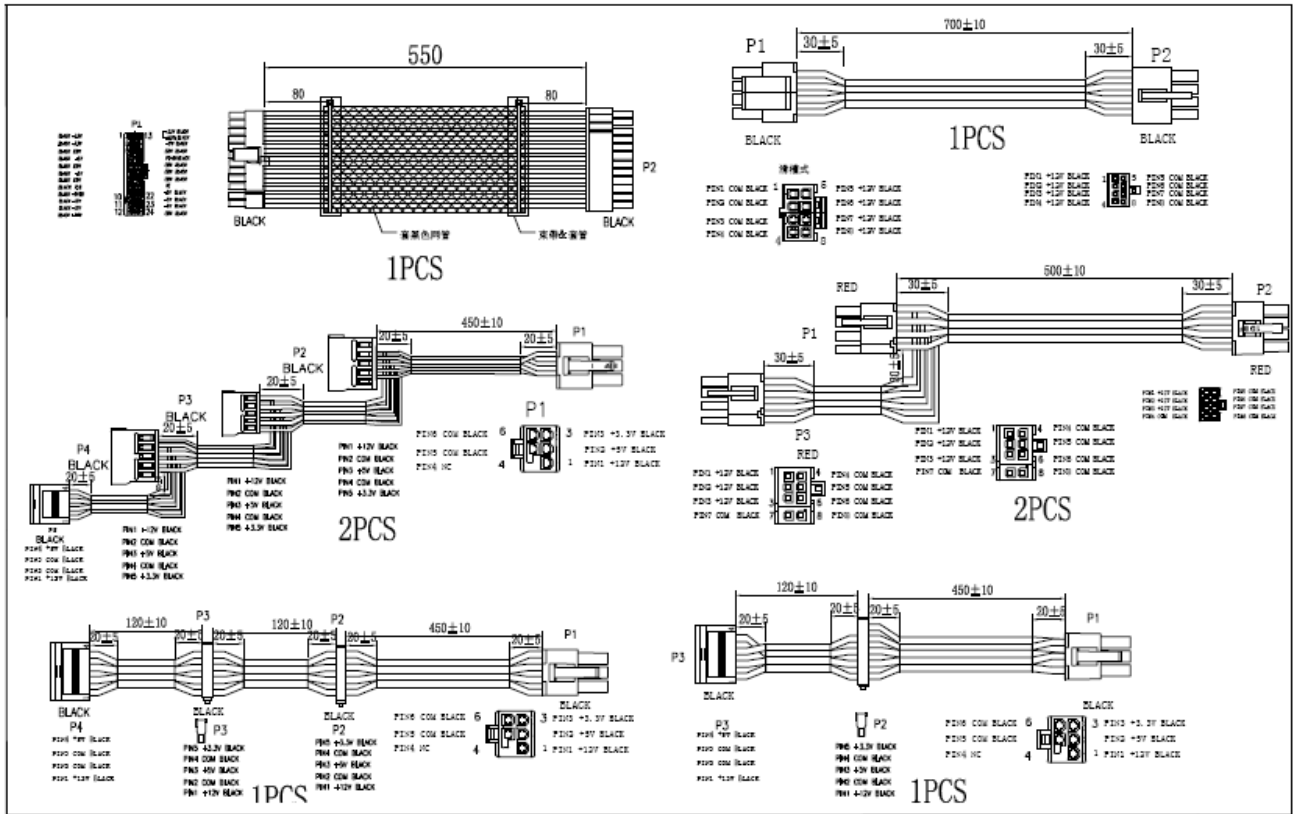
3.5mA MAX. at 264V 50Hz

**8.0 Mechanical:**

**8.1 Mechanical tline:**



8.2 DC wire drawing



8.3 Label drawing

Full Modular

Model/型号: HK700-51PP  
**MVP K600**  
Switching power supply / 开关电源

AC INPUT 交流输入	100-240V~,50-60Hz,10-5A				
DC OUTPUT 直流输出	+12V	+5V	+3.3V	-12V	+5VSB
	45A	15A	15A	0.3A	2.5A
	540W	100W		3.6W	12.5W
600W					

⚠ 警告: 非专业维修人员请勿自行开启此盖!

深圳市航嘉驰源电气股份有限公司

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MADE IN CHINA (中国制造)

# 旗舰高效、稳定之源 航嘉 MVP K600 金牌电源

时间：2019-03-14



## 规格参数

额定功率：600W

80PLUS 认证：金牌

+12V 供电能力：单路 45A

电压范围：90V~264V

PFC 类型：主动 PFC

电路结构：LLC+DC-DC



航嘉 MVP K600 金牌电源

要组装一台高端游戏平台，需要多大功率的电源才够？RTX 2080 的 TDP 为 215W，Core i9 9900K 为 95W，再加上其他配件，至少需要 500W 的电源才行。最近航嘉就为这类高端玩家打造了一款新品——MVP K600，其属于深得玩家喜爱的 MVP 系列，高效又稳定，电源采用了全模组设计。



### 航嘉 MVP K600 金牌电源

航嘉 MVP K600 的规格是非常出色的，其额定功率达到 600W，+12V 电路能提供 45A 的电流，最大输出功率达到 540W，轻松支持市面上各类高端显卡。产品还通过了 80PLUS 金牌认证，最高转换效率达到 90%，意味着产品损耗更少，更省电。



## 航嘉 MVP K600 金牌电源

除了功率大、转换效率高之外，老牌机电大厂航嘉的做工也是该电源的加分项。产品在整个生产环节都保持了很高的水准：设计、选材、生产环节均符合 ROHS 标准，高自动化率的生产过程保证品质的稳定，此外还通过了国家 3C 的认证。电源内部采用了 LLC 谐振+RC 同步整流设计、封闭式主动 PFC 和 DC-DC 数字稳压，再配上高品质固态电容和日系电解电容，有效降低磁损耗、降低输出纹波、电流更加的纯净。



## 航嘉 MVP K600 金牌电源

此外，MVP K600 还有非常完备的安全防护功能，包括宽幅电压设计，100V~240V 范围的电压波动时也能保证电脑正常运行。专门对显卡供电的电压精度和纹波进行了调校，能让显卡运行得更稳定。还有过流保护（OCP）、过压保护（OVP）、过功率保护（OPP），有效保护硬件。

# 双重静音

采用智能温控设计，风扇智能调速，优化内部风道，散热、静音表现出色  
精心调校 有效滤除电子噪声



## 航嘉 MVP K600 金牌电源

电源采用的是 12cm 液压温控轴承风扇，风量足又安静。线材方面采用了全模组设计，好处在于用户能根据自己的需要连接线材，更加的自由。电源上的 24pin 线材、4+4pin CPU 电源线以及 6+2pin 显卡线长度均在 50cm 以上，走背线很方便，让主机内走线更整洁。

总结：好用又不贵，买高品质 600W 电源就选航嘉 MVP K600 金牌电源。无论是从做工、用料、安全性、性能、转换效率等哪个方面来说，都很难从航嘉 MVP K600 金牌电源身上挑出毛病来，算得上是组建高端游戏平台高效、稳定的选择了。