

# ATX12V PC Power Specifications

Model: HK600-12UEPP

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## ECN List

Item	Spec. REV	Revise date	Revise description	Reason
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2	02	2011.11.4	Cancel the efficiency test	
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## HK600-12UEPP Specification

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## 1.0 Input Characteristics:

### 1.1 Input Voltage Range:

90Vac to 265Vac, single phase.

**Table1. Input Voltage Range**

RANGE	MINIMUM	NORMAL	MAXIMUM	UNITS
Low Range	90	100~120	132	Vrms
High Range	180	200~240	265	Vrms

### 1.2 Input Frequency Range:

50+/-3Hz and 60+/-3Hz; Normal Frequency Range: 50-60Hz

### 1.3 Input current

Input current is 8A Max

### 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 Harmonic Current:

Power factor should be more than 0.9 under maximum load and normal input voltage.

## 2.0 Output Characteristics:

### 2.1 Static output characteristics:

**Table3. Static output characteristics**

Output Voltage	Load			Regulation	Ripple & Noise
	Min	Max	Surge		Max mV P-P
1. +5V	0.5A	20A		+/- 5%	50mV
2. +12V	1.0A	35A	40	+/- 5%	120mV
3. +5Vsb	0.1A	2.0A	2.5A	+/- 5%	50mV
4. +3.3V	0.8A	20A		+/- 5%	50mV
5. -12V	0A	0.5A		+/- 10%	120mV

at 25°C.

(1) The total combined 3.3V/5V power shall not exceed 115W.

- (2)The continuous output power shall not exceed 510W.
- (3)Maximum combined current for the 12V outputs shall be 40A

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

**Table 4.Cross Regulation**

Range	+5V	+12V	-12V	+3.3V	+5Vsb
1	0.5	1.0	0.0	0.8	2
2	9	16	0.2	2	1.5
3	20	25	0.0	5	1.0
4	10	35	0.5	10	1
5	9	20	0.5	20	2.0
6	12	8	0.5	14	1.0
7	5	2	0.0	6.5	0.1

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 0.1A/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 5 under the following condition:

**Table5. Dynamic Load Step Sizes**

NOM. OUTPUT VOLTAGE (VDC)	CURRENT I <sub>min</sub>	CURRENT I <sub>max</sub>	STEP LOAD CHANGE (%)	TRANSIENT TOLERANCE (%)
+5.0	0.5A	20A	35	±5
+12.0	1.0 A	35A	65	±5
+3.3	0.8 A	20 A	30	±5
-12.00	0.0 A	0.5 A	40	±10
+5V Sb	0.1 A	2.0 A	25	±5

(Adding external capacitor: 5V/1000uF, 12V/2200uF, 3.3V/1000uF, -12V/350uF, 5Vaux=1uF)

## 2.4 Capacitive Load:

The power supply should be able to power up and operate with the regulation limits defined in Table 5, with the following capacitances simultaneously present on the DC outputs.

**Table7**

Output	Capacitive Load

+12V	11000 $\mu$ F
+5V	12000 $\mu$ F
+3.3V	12000 $\mu$ F
-12V	350 $\mu$ F
+5VSb	350 $\mu$ F

2.5 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 4.5V max.

#### 3.2 Short Circuit Protection:

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

#### 3.3 Over Current Protection:

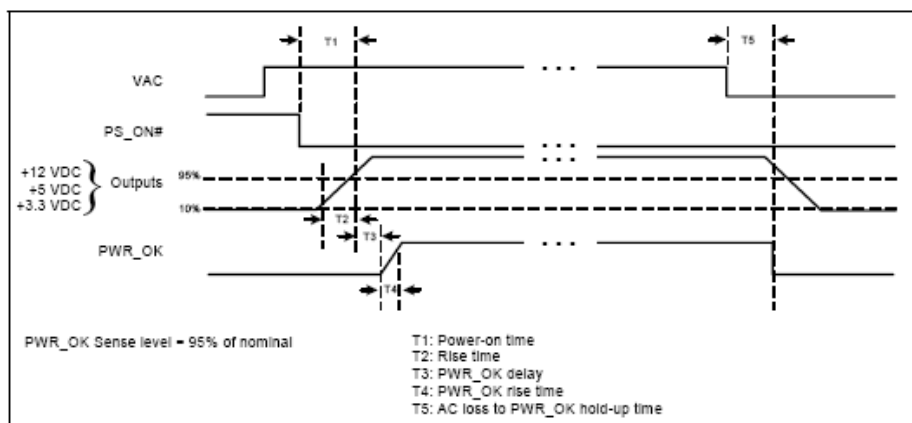
Table8

Voltage	Over Current Limit (Iout limit)
+3.3 V	110% minimum; 160% maximum
+5 V	110% minimum; 150% maximum

#### 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



#### 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 ( $T1 < 500$  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 50 ms ( $0.1 \text{ ms} \leq T2 \leq 50 \text{ ms}$ ).

are shown below:

#### 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 before 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 milliseconds.

#### 4.5 AC loss to PWR\_OK hold-up time T5

The Power Good Signal shall remain an up level for at least 16msec after AC power is removed and shall go to a down level before the 3.3V or +5V falls below their regulation limit.

#### 4.6 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.

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

#### 4.7 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:

**Table10. PS-ON Signal Characteristics**

PS-ON Signal Characteristics		
Signal Description	Min	Max
Input Low Voltage	0.0V	0.8V
Input Low Current ( $V_{in}=0.4V$ )	-	-1.6mA
Input High Voltage ( $I_{in}=-200\mu A$ )	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:

**Table11. Operating ambient**

Air Temperature	0 to 40 degrees centigrade
Relative Humidity	5 to 85 percent, non-condensing

**6.2 Shipping and Storage:**

**Table12. Shipping and Storage**

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

**6.3 Altitude:**

Operating to 3050 meters(10,000 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 fan speed is adjusted with the change of ambient temperature and load to ensure the temperature of components within the derating range

**7.0 Safety and EMC**

**7.1 SAFETY REQUIREMENTS AND Certify**

The power supply has been certified by CCC of China and comply with GB4943-2000 (IEC60950-1). The CCC 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 GB9254 Class B.

**7.3 ESD:**

ESD of the power supply shall comply with the requirements of IEC61000-4-2 Level 3.

**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

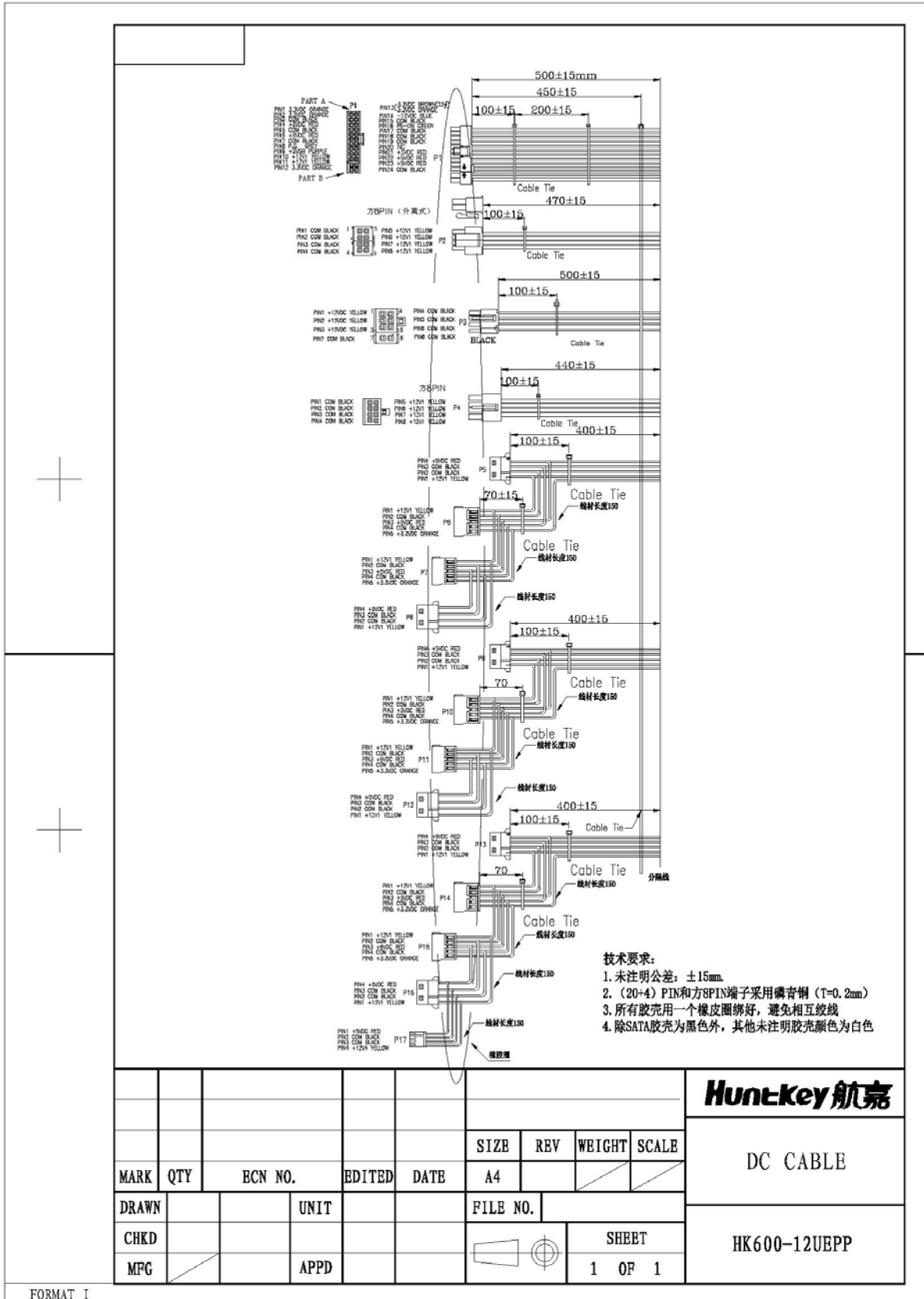
**8.0 Mechanical:**

## 8.1 Mechanical outline:




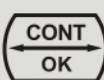







## 8.2 DC wire drawing



## 8.3 Label drawing

		型号: HK600-12UEPP 交流输入: 100-240V~, 50/60Hz, 8A 序列号: 01000001
<b>SWITCHING POWER SUPPLY</b>		<b>开关电源</b>
直流输出: +12V=35A (黄色), +3.3V=20A (橙色), +5V=20A (红色), -12V=0.5A (蓝色), +5Vsb=2.0A (紫色), PG (灰色) 额定输出功率: 510W, +5V&+3.3V: 115W		
<b>CAUTION!</b> <b>警告</b>	Do not remove this cover under any circumstances. 非专业维修人员请勿自行开启此盖	
		
		
		
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