



E. C. LIST/变更履历表

Rev. 版本	Description of Change/变更内容描述		Changed Date/日期	ECN No.
	Before/变更前	After/变更后		
1	Original Release	---	2017-11-30	---

Contents/目录

1. SCOPE/概述.....	4
2. Input Characteristics/输入特性.....	4
3. Output Characteristics/输出特性.....	5
4. Protection Requirements/保护要求.....	6
5. Environment Requirements/环境要求.....	6
6. Reliability Requirements/可靠性要求.....	7
7. EMI/EMS Standards/EMI/EMS 标准.....	7
8. Safety Standards/安规标准.....	8
9. Mach. Outline Drawing/外观图.....	8
10. Label Drawing/标贴图.....	9
11. Package Drawing/包装示意图.....	10

1. SCOPE/概述

The document details the electrical, mechanical and environmental specifications of a SMPS, the power supply provides 45 W continuous output power.

资料详细描述了一款 45 W(连续输出功率)开关电源的电气性,结构性及环境等要求.

The power supply shall meet the RoHS requirements.

此款电源符合 RoHS 要求.

Description/描述:

- SMPS Adapter(Wall mount)/插墙式适配器 SMPS Adapter(Desk-top)/桌面型适配器
 Open Frame/开放式结构 SMPS Unit (With Case)/带铁壳型
 Others/其他

2. Input Characteristics/输入特性

2.1. Input Voltage & Frequency/输入电压与频率

The range of input voltage is from 90Vac to 264Vac with a single phase.

输入电压范围: 从 90Vac 到 264Vac, 单相输入.

	Minimum/最小	Rating/额定值	Maximum/最大
Input Voltage/输入电压	90Vac	100Vac~240Vac	264Vac
Input Frequency/输入频率	47Hz	50Hz/60Hz	63Hz

2.2. Input AC Current/输入交流电流

1.3Amax. @ 90Vac input & Full load/在 90Vac 输入和满载条件下最大 1.3A

2.3. Inrush Current (cold start)/浪涌电流(冷启动)

Power supply inrush current shall be less than the ratings of its critical components (including rectifiers, fuses and other surge limiting devices) under all conditions of line voltage of Section 2.1.

在 2.1 中所有输入条件下, 浪涌电流应小于关键器件的额定值(包括整流桥、保险丝和其他浪涌限制元件)

2.4. Average Efficiency /平均效率

Test condition after heat-up 15minutes/测试条件产品预热 15 分钟后

Input Voltage Range	Output Voltage	Average Efficiency	Load Condition
115VAC and 230VAC	5V	81.84	25%,50%,75%,100%
	9V	87.30	25%,50%,75%,100%
	15V	88.85	25%,50%,75%,100%
	20V	88.85	25%,50%,75%,100%

2.5. No-Load Input Power Dissipation/输入空载功率损耗

Test condition after heat-up 15minutes/测试条件产品预热 15 分钟后

While input at the 115Vac and 230Vac, output voltage is 5V and no load, the input power loss must be less than 0.075W.

在输入 115V 和 230Vac 时, 输出为 5V 时, 空载功耗小于 0.075W.

3. Output Characteristics/输出特性

3.1. Static Output Characteristics <Vo & R+N>/静态输出特性<输出&纹波+噪音>

Output Rating	Rated Load/额定负载		Output Range 输出电压范围	R+N 纹波与噪声	Remark 备注
	Min. Load	Max. Load			
+5V	0A	3.0A	4.75V ~ 5.25V	100mVp-p	
+9V	0A	3.0A	8.55V~9.45V	220mVp-p	
+15V	0A	3.0A	14.25V~15.75V	350mVp-p	
+20V	0A	2.25A	19V ~ 21V	350mVp-p	

Ripple & Noise: Tested by a oscilloscope using 20MHz bandwidth and the output is paralleled a 0.1uF ceramic capacitor and a 10uF electrolysis capacitor. (Under the input Voltage 100~240Vac)

纹波与噪声: 量测时示波器选用 20MHz 带宽限制,输出端要并联一颗 0.1uF 的陶瓷电容和一颗 10uF 的电解电容(输入电压 100~240Vac)

3.2. Line/ Load Regulation/线性/负载调整率

Output Voltage	Load Condition/负载条件		Line Regulation 线性调整率	Load Regulation 负载调整率	Remark 备注
	Min. Load	Max. Load			
+5V	0A	3A	± 5%	± 5%	
+9V	0A	3A	± 5%	± 5%	
+15V	0A	3A	± 5%	± 5%	
+20V	0A	2.25A	± 5%	± 5%	

3.3. Turn - on Delay Time/开机延迟时间

3S max. @ 90Vac input & Full load/在 90Vac 输入和满载条件下最大 3S

3.4. Output Load Transient Response/输出负载瞬态响应

+5V Output voltage is within 4.5~5.5V while the load step is from 20% to 80% of max load, R/S: 0.25A/uS, frequency: 100Hz and 5mS duration at 80% of max load.

输出电压在 4.5~5.5 V 之间,负载变化: 从最大载的 20%到 80%,斜率: 0.25A/uS,频率: 100Hz, 80% 负载持续时间为 5mS.

+9V Output voltage is within 8.0~10.0V while the load step is from 20% to 80% of max load, R/S: 0.25A/uS, frequency: 100Hz and 5mS duration at 80% of max load.

输出电压在 8~10V 之间,负载变化: 从最大载的 20%到 80%,斜率: 0.25A/uS,频率: 100Hz, 80% 负载持续时间为 5mS.

+15V Output voltage is within 13.5 ~16.5V while the load step is from 20% to 80% of max load, R/S: 0.25A/uS, frequency: 100Hz and 5mS duration at 80% of max load.

输出电压在 13.5. ~16.5V 之间,负载变化: 从最大载的 20%到 80%,斜率: 0.25A/uS,频率: 100Hz, 80% 负载持续时间为 5mS.

+20V Output voltage is within 18~22V while the load step is from 20% to 80% of max load, R/S: 0.25A/uS, frequency: 100Hz and 5mS duration at 80% of max load.

输出电压在 18~22V 之间,负载变化: 从最大载的 20%到 80%,斜率: 0.25A/uS,频率: 100Hz, 80% 负载持续时间为 5mS

3.5. Capacitance Load/容性负载

While input 100~240Vac and capacitance load is 100uF, output voltage is for +5V or +9Vdc or +15Vdc or +20Vdc, the adapter can turn on normally and the output is in the rated range.

在输入 100~240Vac, 100uF 容性负载条件下, 输出电压为 5V,9V,15V 或 20V, 适配器能正常开机。并且输出电压范围在额定范围下。

4. Protection Requirements/保护要求

4.1. Over Current Protection/过流保护

OCP Point Limited: not more than 130% of MAX. load.

保护限制点: 小于各自最大负载的 130%

The output shall be latched when the over current applied to the output, The output shall be recovery when the fault condition is removed and AC power off is greater than one minute
当过电流时,输出将会锁死,当过流情况解除后并且 AC 断电大于 1 分钟,产品将会恢复正常

4.2. Short Circuit Protection/短路保护

The input power shall decrease when the output is short to GND, the power supply shall not damage, Input power reduce. and shall be self-recovery when the fault condition is removed

当输出对地短路时,产品输入功率降低且不会损伤,当短路情况解除后,产品将会自动恢复正常

4.3. Over Voltage Protection/过压保护

5V output-OVP Point Limited: Maximum 7.5V。 5V 输出保护限制点: 小于 7.5V

9V output-OVP Point Limited: Maximum 12V.。 9V 输出保护限制点: 小于 12V

15V output-OVP Point Limited: Maximum 20V.。 15V 输出保护限制点: 小于 20V

20V output-OVP Point Limited: Maximum 26V.。 20V 输出保护限制点: 小于 26V

The power supply shall be protected when the output is over voltage, and the power supply shall not be damaged

当输出过压时,产品保护且不会损伤

4.4. Over Temperature Protection/过温保护

A temperature sensor and associated protection circuitry are installed inside the adapter to detect the case internal temperature and provide protection against damage to the adapter.

过温保护电路被设置在适配器内部, 避免适配器损坏

5. Environment Requirements/环境要求

5.1. Operating Temperature and Relative Humidity/操作温度和湿度要求

0°C to +40°C

5%RH to 90%RH@ Sea level shall below or no more than 5000 meter

在海拔小于或等于 5000 米的条件下, 低温工作下限为 0°C, 高温工作上限为

+40°C, 相对湿度为 5%RH to 90%RH.

5.2. Storage Temperature and Relative Humidity/存储温度和湿度要求

-20°C to +70°C

0%RH to 95%RH (non-condensing) @ Sea level shall below 35,000 feet
在海拔低于 35,000 英尺的条件下, 低温存储下限为-20°C (无结冰环境); 高温存储上限为 +70°C,相对湿度为 10%RH to 95%RH。

6. Reliability Requirements/可靠性要求

6.1. Drop in/跌落

1 drop for each surface, 6 drops each unit, all 6 surfaces need to be test , Height: 1.0m, on the cement plane

每个面 1 次, 跌落高度:1.0 米, 跌落到水泥面上

6.2. MTBF Qualification/平均间隔故障时间估算

The MTBF shall be at least 30,000hours at 25°C, Full load and nominal input condition
平均间隔故障时间: 至少 30,000 小时, 25°C 环境及额定输入与满载条件下

6.3. The lifetime electrolyte capacitor/电解电容寿命

The lifetime of electrolyte capacitor shall be at least 17520 hours at 25°C, 80% load and rated input condition

电解电容寿命至少 17520 小时, 25°C 环境及额定输入与 80%负载条件下。

7. EMI/EMS Standards/EMI/EMS 标准

7.1. EMI Standards/EMI 标准

EN 55022
EN 61000-3-2
EN 61000-3-3
CISPR 22
AS/NZS CISPR 22
满足最新标准

7.2. EMS Standards/EMS 标准

EN 61000-3-2	Harmonic current emissions: class D
EN 61000-3-3	Voltage fluctuations & flicker
EN 61000-4-2	Electrostatic Discharge(ESD): 8kV air discharge, 4kV contact discharge
EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test-RS.
EN 61000-4-4	Electrical Fast Transient/Burst-EFT: ±1kV on AC power port.
EN 61000-4-5	Surge Immunity Test: Differential mode ±1kV, Common mode ±2kV
EN 61000-4-6	Conducted Radio Frequency Disturbances Test-CS
EN 61000-4-8	Power Frequency Magnetic Field Test
EN 61000-4-11	Voltage Dips

8. Safety Standards/安规标准

8.1. Dielectric Strength(Hi-pot)/介电耐压强度(高压)

Primary to Secondary: 3000Vac / 3.5mA / 60 seconds
Or 4242Vdc / 3.5mA / 60 seconds

初级对次级: 3000Vac / 3.5mA / 60 秒
或 4242Vdc / 3.5mA / 60 秒

8.2. Leakage Current/漏电流

0.25mA max. at 264Vac / 50Hz input/在输入 264Vac/50Hz 的条件下最大 0.25mA

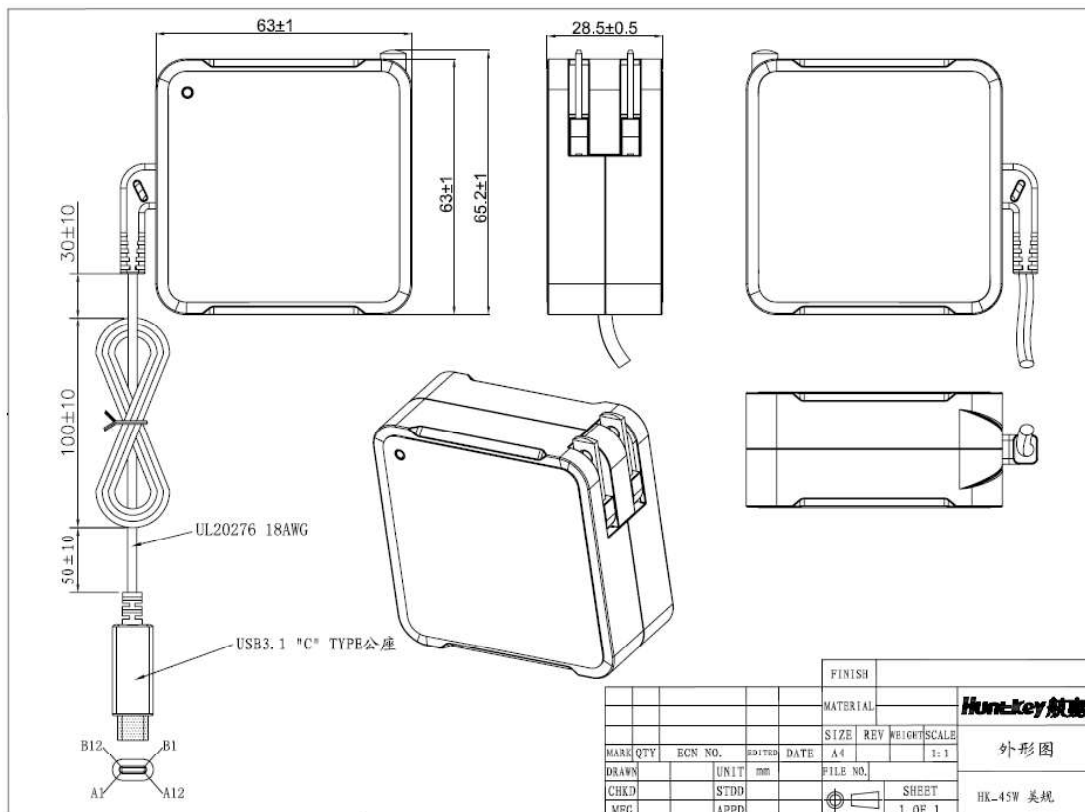
8.3. Insulation Resistance/绝缘阻抗

100MΩ min. @ primary to secondary add a 500Vdc test voltage
在初级与次级间加 500Vdc 进行测试,最小 100MΩ

8.4. Regulatory Standards/安规标准

Type	Country	Standard	Type	Country	Standard
<input type="checkbox"/> UL/CUL	USA	UL60950-1	<input type="checkbox"/> PSB	Singapore	IEC60950-1
<input type="checkbox"/> TUV/GS	Europe	EN60950-1	<input type="checkbox"/> PSE	Japan	J60950
<input type="checkbox"/> CCC	China	GB4943	<input type="checkbox"/> NOM	Mexico	NOM-001
<input type="checkbox"/> CE	Europe	EN60950-1	<input type="checkbox"/> GOST	Russia	MEK60950
<input type="checkbox"/> C-Tick	Australia	AS/NZS 3548	<input type="checkbox"/> KC	Korea	K60950-1
<input type="checkbox"/> BSMI	Taiwan .China	CNS 14336			

9. Mach. Outline Drawing/外观图



10. Label Drawing/标贴图

技术要求:

1. 上盖, 内容为镭雕, 颜色以封样为准;
2. 字体清晰、颜色均匀、无毛边。
3. 可靠性测试: 用50g砝码耐酒精擦拭50次无不良;
4. 安装LOGO大小比例不允许变动
5. 镭雕位置尺寸: ± 0.5
6. 编码规则: 日期以供应商送货日为准(即航嘉产品的出货日)字体为Arial Unicode Ms

S/N: A45D2J1123000001

a. 生产线别: 用数字1-9, 字母A-R表示, 由制造部门来管控(数字0, 字母I, O不能使用)

b. 机种名称: 45代表45W系列, D代表成品料号。

c. 客户代码: 按航嘉现有客户编码, 不变。

d. 制造年月日: 11代表2011年, 12代表2012年, 以此类推; 2表示月份, C代表12月, B代表11月, A代表10月, 1-9月用自然数字表示; 3代表日, 1=1, 2=2, 3=3, 4=4, 5=5, 6=6, 7=7, 8=8, 9=9, A=10, B=11, C=12, D=13, E=14, F=15, G=16, H=17, J=18, K=19, L=20, M=21, N=22, P=23, R=24, S=25, T=26, V=27, W=28, X=29, Y=30, Z=31。

e. 产品流水号: 依生产顺序编码, 日期变, 流水号从头开始。

				MATERIAL				Huntkey 航嘉	
MARK	QTY	ECN NO.	EDITED	DATE	A2	T01	SCALE	上盖镭雕	
DRAWN	陈伟雄	2018.06.01	UNIT	mm	FILE NO.		1:1	HKA04520023-1J	
CHKD	刘志刚	2018.06.01	STDD	陈伟雄	2018.06.01		SHEET		
MFG			APPD	吴洪斌	2018.06.01		1 OF 1		

技术要求:

1. 下盖, 内容为镭雕, 颜色以封样为准;
2. 字体清晰、颜色均匀、无毛边。
3. 可靠性测试: 用50g砝码耐酒精擦拭50次无不良;
4. 安装LOGO大小比例不允许变动
5. 镭雕位置尺寸: ± 0.5
6. 编码规则: 日期以供应商送货日为准(即航嘉产品的出货日)字体为Arial Unicode Ms

S/N: A45D2J1123000001

a. 生产线别: 用数字1-9, 字母A-R表示, 由制造部门来管控(数字0, 字母I, O不能使用)

b. 机种名称: 45代表45W系列, D代表成品料号。

c. 客户代码: 按航嘉现有客户编码, 不变。

d. 制造年月日: 11代表2011年, 12代表2012年, 以此类推; 2表示月份, C代表12月, B代表11月, A代表10月, 1-9月用自然数字表示; 3代表日, 1=1, 2=2, 3=3, 4=4, 5=5, 6=6, 7=7, 8=8, 9=9, A=10, B=11, C=12, D=13, E=14, F=15, G=16, H=17, J=18, K=19, L=20, M=21, N=22, P=23, R=24, S=25, T=26, V=27, W=28, X=29, Y=30, Z=31。

e. 产品流水号: 依生产顺序编码, 日期变, 流水号从头开始。

				MATERIAL				Huntkey 航嘉	
MARK	QTY	ECN NO.	EDITED	DATE	A2	T01	SCALE	下盖镭雕	
DRAWN	陈伟雄	2018.06.01	UNIT	mm	FILE NO.		1:1	HKA04520023-1J	
CHKD	刘志刚	2018.06.01	STDD	陈伟雄	2018.06.01		SHEET		
MFG			APPD	吴洪斌	2018.06.01		1 OF 1		