

1. Scope of Application 适用范围

Power supplies for Information Technology Equipment including electrical business equipment, networking equipment, safety security camera, monitoring and other fields.

Operating conditions of this power supply are as follows:

信息技术设备的电源，包括电子商务设备，网络设备，安全监控摄像头，监视和其他领域。

2. Electrical Specifications 电气规格

2.1 Input Characteristics

Item	Parameter	Technical Requirement	Unit	Remark
2.1.1	Rated input voltage 额定输入电压	100~240	Vac	
2.1.2	Input Voltage Range 输入电压范围	90~264	Vac	
2.1.3	Input Voltage Frequency 输入电压频率	47 ~ 63	Hz	50/60Hz
2.1.4	Starting impulse current 启动冲击电流	≤ 120	A	Vin=230Vac,冷启动
2.1.5	Maximum Input Current 最大输入电流	≤ 2.5	A	Vin115Vac, Full load 满载
2.1.6	Efficiency 效率	$\geq 86\%$		115VAC 输入，满载
		$\geq 88\%$		230VAC 输入，满载
2.1.7	PFC value 功率因素	115Vac, ≥ 0.97		额定输入，满载
		230Vac, ≥ 0.93		

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2.2 Output Characteristics 输出特性						
Item	Parameter	Technical Requirement			Unit	Remark
2.2.1	Rated Output Voltage 额定输出电压	12.0			Vdc	
2.2.2	Output Voltage Range 输出电压范围	11.64~12.5			Vdc	
2.2.3	Output rated current 输出额定电流	10			A	
2.2.4	Output minimum current 输出最小电流	0			A	
2.2.5	Load regulation 负载调整率	±3%				
2.2.6	Line regulation 线性调整率	±2%				
2.2.7	Capacitive load 容性负载	2200			uF	
2.2.8	Turn on delay time 开启延迟时间	≤ 3			S	额定输入, 额定负载
2.2.9	Rise time 上升时间	≤ 100			ms	额定输入, 额定负载
2.2.10	Output maintenance time 输出维持时间	≥10			ms	额定输入 额定负载
2.2.11	Output Ripple and Noise 输出纹波和噪声	0℃~55℃: ≤ 120mV			mVp-p	限制带宽 20MHz,负载端并 104 陶瓷电容和 10 μ F 电解电容
		-15℃~0℃: ≤ 120mV				
2.2.12	Temperature Coefficient 温度系数	±0.02%			V	
2.2.13	Turn-On/Off Overshoot 开启/关闭/过冲	± 10%				
2.2.14	Dynamic Response 动态响应	过冲幅度	± 10%	± 10%	μS	20%~80%负载变化, 频率≤1KHZ
		恢复时间	400			

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2.3 Protections 保护装置

Item	Parameter	Technical Requirement	Unit	Remark
2.3.1	Output over current protection 输出过电流保护	12-20	A	打嗝重启, 去除故障可自动恢复
2.3.2	Output over voltage protection 输出过压保护	13.2~16.8	V	恒压(输出最小载 0.1A 条件下测试)
2.3.3	Over Temperature Protection 过温保护	75±10	℃	
2.3.4	Output Short Circuit Protection 输出短路保护	The PSU automatically recovery after short circuit is moving 故障移除, 产品自动恢复		

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3. EMC Requirements EMC 要求

3.1 EMI Requirements 电磁干扰要求

Item	Regulations	Class level	Note
Conduction interference 传导干扰	EN55032	A	电源系统测试
Radiation interference 辐射干扰	EN55032	A	
Warning: In residential environment, running this equipment may cause Radio jamming! 警告：在居住环境中，运行此设备可能会造成无线电干扰！			

3.2 EMS Requirements EMS 要求

Item	Regulations	Spec	Criterion level
ESD 静电	IEC-61000-4-2	接触放电 6KV ; 空气放电 8KV	B
Surge 雷击	IEC-61000-4-5	DM ±6KV, CM ±6KV	B
EFT 快速脉冲群	IEC61000-4-4	Level 3, ±2KV	B
voltage dips 电压突降	IEC61000-4-11	30% reduction for 500mS at 0° phase	A
		100% reduction for 10mS at 0° phase	A
		100% reduction for 20mS at 0° phase	A
		100% reduction for 5000mS at 0° phase @220Vac/50Hz & Full Load	B

4. Safety Requirements 安全要求

Item	Parameter		Technical Requirement	Remark
4.1	Electric Strength Test 电气强度测试	L,N to DC output	3000Vac/15mA/1min	The PSU no flash over and insulation break down occurs during electric strength test.
		L,N to earth	1500Vac/15mA/1min	
		DC output to earth	500Vac/10mA/1min	

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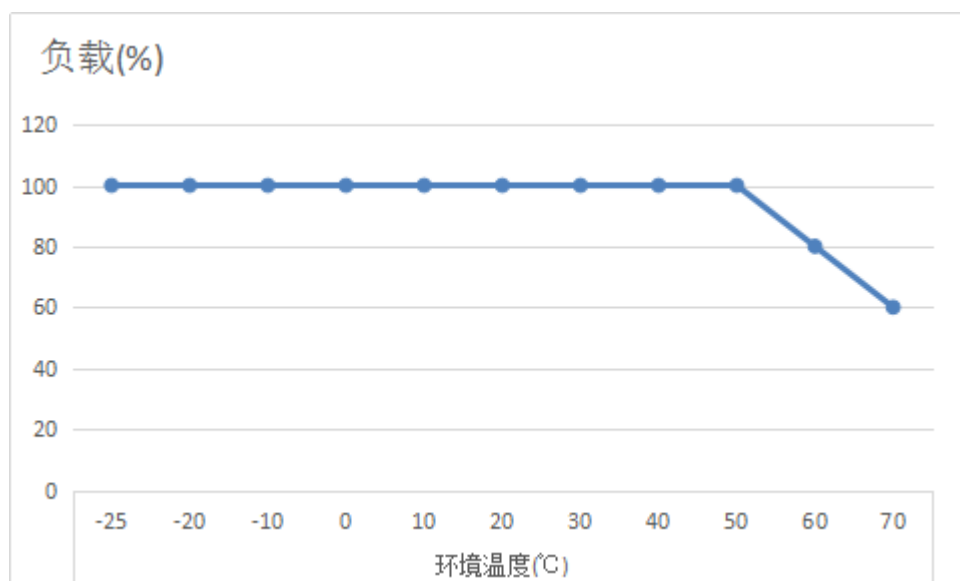
4.2	Insulation Resistance 绝缘电阻	L,N to DC Output	$\geq 100\text{M}\Omega @ 500\text{Vdc}$	Typical value (normal temperature and humidity)
		L,N to earth	$\geq 100\text{M}\Omega @ 500\text{Vdc}$	
		DC Output to earth	$\geq 100\text{M}\Omega @ 500\text{Vdc}$	
4.3	Leakage current 漏电流	$\leq 3.5\text{mA} @ 240\text{Vac}$		
4.4	Safety 安全	Meet UL/en62368-1 and GB4943		

5.Environmental Requirements 环境要求

Item	Parameter	Technical Requirement	Unit	Remark
5.1	Operating Temperature 工作温度	$-10^{\circ}\text{C} \sim +60^{\circ}\text{C}$	$^{\circ}\text{C}$	Typ :25 $^{\circ}\text{C}$
5.2	Storage Temperature 存储温度	$-40^{\circ}\text{C} - +70^{\circ}\text{C}$	$^{\circ}\text{C}$	Typ :25 $^{\circ}\text{C}$
5.3	Operating Humidity 操作湿度	5%-95%	RH	Non-condensing (非凝结)
5.4	Storage Humidity 存储湿度	5%-95%	RH	Non-condensing (非凝结)
5.5	Altitude 高度	≤ 5000	M	
5.6	Vibration Test 振动测试	5Grms,10Hz to 500Hz,10 minutes/cycle,60 minutes along X,Y,Z axis	/	
5.7	MTBF 平均无故障时间	300,00	hours	MIL-HDBK-217F (25 $^{\circ}\text{C}$)
5.8	散热方式	自然冷却		
5.9	E-cap 电解电容寿命	10 Year Min 不小于 10 年	Year	100Vac & Full load & 35 $^{\circ}\text{C}$

6. Derating curve 降额曲线

Note: Power vs temperature derating curve as below 功率与温度的降额曲线如下



备注：当环境温度为55℃时，负载降额为90%，环境温度为60℃时，负载降额为80%

Remarks: when the ambient temperature is 55℃, the load reduction is 90%, and the ambient temperature is 60℃, the load reduction is 80%.