
1. Introduction

1.1 Power Supply Overview

This product has the feature such as high efficiency and high reliability, and it also has the protection function such as short-circuit protection, over voltage protection and over current protection.

1.2 Applicable Documents

The products choose the standards as following for design verification test (but no limited) .

- GB/T 2423.1-01
Basic environmental testing procedures for electric and electronic products Tests A: Cold
 - GB/T 2423.2-01
Basic environmental testing procedures for electric and electronic products Tests B: Dry heat
 - GB/T 2423.3-93
Basic environmental testing procedures for electric and electronic products Test Ca: Damp heat, steady state
 - GB/T 2423.4-93
Basic environmental testing procedures for electric and electronic products Test Db: Damp heat cyclic
 - GB/T 2423.5-95
Environmental testing for electric and electronic products. Part 2: test methods. Test Ea and guidance: Shock
 - GB/T 2423.6-95
Environmental testing for electric and electronic products. Part 2: Test methods. Test Eb and guidance: Bump
 - GB/T 2423.8-95
Environmental testing for electric and electronic products. Part 2: Test methods. Test Ed: Free fall
 - GB/T 2423.10-95
Environmental testing for electric and electronic products. Part 2: Test methods. Test Fc and guidance: Vibration(Sinusoidal)
 - GB/T 2423.11-97
Environmental testing for electric and electronic products. Part 2: Test methods. Test Fd: Random Vibration wide band_ general requirements.
 - GB/T 2423.22-87
Basic environmental testing procedures for electric and electronic products. Test N: Change of temperature
 - GB/T 17626.2-1998
Electromagnetic compatibility-Testing and measurement techniques-Electrostatic discharge immunity test
 - GB/T 17626.4-1998
Electromagnetic compatibility-Testing and measurement techniques-Electrical fast transient/ burst immunity test
 - GB/T 17626.5-1998
Electromagnetic compatibility-Testing and measurement techniques-Surge immunity test
 - GB/T 17626.11-1998
Electromagnetic compatibility-Testing and measurement techniques-Voltage dips, short interruptions and voltage variations immunity tests
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2 Electrical Specification

2.1 AC AC Input

2.1.1 Input Voltage

Table 1: Lists the AC input operating voltage range. The power shall work normally and meet all electrical requirements throughout this range.

Table 1: AC Input Voltage Limitations

Minimum	Nominal	Maximum
110Vac	110Vac/220Vac	240Vac

2.1.2 Input Frequency

Table 2: List the AC input operating frequency range. The power shall work normally and meet all electrical requirements throughout this range.

Table 2: AC Input Frequency Limitations

Minimum	Nominal	Maximum
47Hz	50Hz/60Hz	63Hz

2.1.3 Inrush Current

Peak inrush current shall be limited to 50A of rated input voltage and cold start at 25 degrees C, and shall not result in a permanent damage of the power supply under any conditions of load and input voltage as specified at any input voltage as specified in table 1.

2.1.4 Input Current Limiting

The input current should be less than 2.0A, under minimum AC input and full load.

2.1.5 Efficiency

The power supply efficiency shall be greater than 85% under rated input voltage. It will be measured at the typical load and maximum load.

2.2 Output Specification

2.2.1 DC Voltage Regulation

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The DC output voltages will remain within the regulation ranges shown in Table 5 when measured at the load end of the output connectors.

The voltage regulation limits do not include the transient DC load changes, which are covered in Section 3.2.4.

Table 3: DC Output voltage regulation limits

Parameter	Charging finish voltage	floating charge voltage	Cross regulation
V1:29.4V	29.3-29.5V	/	N/A

2.2.2 DC Output Current And The LED Light

Table4: DC output current limits CV model

Parameter	Min Current	Rate Current	Max Current	Unit
V1: 29.4V	2.25	2.5	2.75	A
2.5A	17.5V		27.4V	
LED				
Input plugs	green		current<500mA	
charging	red		current>500mA	
Finish charge	green		current<300mA	

2.2.3 Output Ripple and Noise

The following table 5 is output ripple and noise requirements, it will be met throughout the load ranges specified in Section 2.2.2 and under all input voltage conditions as specified Section 2.1.1, Measurements will be made with an oscilloscope set to 20MHz bandwidth limit. The outputs will be bypassed with one 0.1uF multilayer (type X7R) and one 10uF tantalum electrolytic (low ESR) capacitors.

Table 5: Output ripples and noise limits CV model

Parameter	Max.
V1:29.4V	2000mVp-p@25 degrees C

2.2.4 Output Dynamic Load Response CC model

The output voltages will remain within specified regulation limit of the nominal set voltage for changes in load as specified below under the following load steps defined below table 8. At a slew rate of 0.1Amps/uS between 50Hz to 10 KHz.

Table6: Output dynamic load response limits

Dynamic Load	DC Voltage Regulation
50%~100%~50%	±10%

2.2.5 Overshoot at turn-on/ turn-off

Any overshoot at turn on or turn off shall be less than 10% of rated output voltage.

2.3 Protection Function .

2.3.1 Short Circuit Protection

An output short circuit is defined as any output impedance of less than 0.1 ohms. The power supply will protect without damage to overseers of to the unit (components, connectors, etc) under the input conditions specified in Section 3.1 above.

2.3.2 Over Current Protection

The power supply shall meet the limitation requirement as below table without any damage, the unit shall recover and function automatically after the protection is removed.

Table 7: Over Current Protection limits

Parameter	Max	Unit
V1: 29.4V	2.95	A

2.4 Timing

2.4.1 Hold up Time

Hold-up time no less than 5mS at 100Vac/47Hz input and no less than 10mS at 110/220Vac/50/60Hz input, the output loading should be set up with full load during the test.

2.4.2 Start up Time

Start up time no more than 3 seconds at 100Vac/47Hz input and no more than 2 seconds at 110/220Vac/50/60Hz, the output loading should be set up with full load during the test.

3. Environment Requirement

3.1 Temperature

Operating Ambient: $-10^{\circ}\text{C} \sim 40^{\circ}\text{C}$

Non-operating Ambient: $-20^{\circ}\text{C} \sim +85^{\circ}\text{C}$

3.2 Humidity

Operating: 25%~90% relative humidity (Non- condensing)

Non-operating: 10%~90% relative humidity (Non- condensing)

3.3 Altitude

Operating: 2000 meters

Non-operating: 5000meters

4. Reliability

4.1 MTBF (MIL-HDBK-217F)

MTBF no less than 20K hours (25 degrees C, Full load and rated voltage input)

4.2 Burn-in and Life test

Shall discuss with customer to make sure the power in house Burn-In and life test procedures.

5. Product Safety Requirement

5.1 Standard

Meet IEC60950-1 (information technology and similar electric apparatus -safety requirement) standard requirement.

5.2 Leakage Current

Leakage current shall not exceed 0.25mA at 220Vac/50Hz.

5.3 Insulation Resistance

-Primary to Secondary: 50 Meg. Ohms min. 500VDC

5.4 Dielectric Strength Testing

Hi-pot test shall be met the table 8 requirements, an item listing this test as a 100% production test must be performed and be maintained at that level for a minimum of 3 seconds without failure.

Table 8: Hi-pot test

Item	Specification		Remark
Primary to Secondary	1500Vac	<5mA	No arcing
Primary to P.G	/	/	No broken

6. Mechanical Dimensions (Unit: mm)

6.1 Label

6.2 Mechanical Dimensions UNIT:(mm)



135*56*45mm,

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