茂硕电源科技股份有限公司
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SPECIFICATION FOR REFERENCE

CUSTOMER: _____

CUSTOMER P.N.: _____

MODEL NO.: MSA-Z2500IS24.0-60X-Q

PRODUCT NO.: SBXXX

SAMPLE DATE: 2022-03-10

CUSTOMER AUTHORIZED SIGNATURE		

Please return to us one copy of "SPECIFICATION FOR APPROVAL" with you approved signature.

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E. C. LIST

Rev.	Description of Change		Changed Date	ECN No.
	Before	After		
A.1	Original Release		2022-03-10	---

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1. SCOPE

The document detail the electrical, mechanical and environmental specifications of a SMPS, the power supply provide 60W continuous output power.

The power supply shall meet the **RoHS** requirement.

1.1. Description

☐ SMPS Adaptor(Wall mount) ■ SMPS Adaptor(Desk-top)

☐ Open Frame ☐ SMPS Unit (With Case)

☐ Others

2. Input Characteristics

2.1. Input Voltage & Frequency

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

	Minimum	Nominal	Maximum
Input Voltage	90Vac	100Vac~240Vac	264Vac
Input Frequency	47Hz	50Hz/60Hz	63Hz

2.2. Input AC Current

1.5A max. @ 100-240Vac input & Full load.

2.3. Inrush Current (cold start)

No component was damaged and the fuse should not blow.

2.4. Averaged Efficiency (DOE level VI)

88% min. @115V/230Vac input (@25%, 50%, 75% and 100% of max load).

2.5. Energy Consumption

No load consumption ≤0.21W(115Vac/60Hz,230Vac/50Hz).

3. Output Characteristics

3.1. Static Output Characteristics <Vo & R+N>

Output	Rated Load		Output Range	R+N	Remark
Rate	Min. Load	Max. Load			
+24V	0.0A	2.5A	22.8V ~ 25.2V	240mVp-p	100-240V

Ripple & Noise: Measurement is done by 20MHz bandwidth oscilloscope and the output paralleled a 0.1uF ceramic capacitor and a 10uF electrolytic capacitor. (test under the condition of rated input and rated output).

3.2. Line/ Load Regulation

Output	Load Condition		Line Regulation	Load Regulation	Remark
Rate	Min. Load	Max. Load			
+24V	0.0A	2.5A	±2%	±5%	

3.3. Turn - on Delay Time

5S max. @ 120Vac input & Full load.

3.4. Hold-up Time

8mS min. @ Full load &120Vac/60Hz input turn off at worst case

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3.5. Rise Time

80mS max. @ Rated load.

3.6. Fall Time

80mS max. @ Full load.

3.7. Output Overshoot / Undershoot

10% max. When the power on or off, when it is the full input voltage and full load.

3.8. Output Load Transient Response

Output voltage within 21.6V-26.4V for load step from 20% to 80%, R/S: 0.5A/uS, Frequency: 100Hz duration and 8mS at 80%.

4. Protection Requirements

4.1. Over Current Protection

230VAC input, LOAD=13A can be directly started, gradually increase the LOAD. After protection, in LATCH state, it should be after discharge and reinput AC, then can be started.

At 100V/60HZ, the OCP range is between 8A~11A. At 240V/50HZ, the OCP range is between 13A ~15A.

4.2. Short Circuit Protection

it should be after discharge and reinput AC voltage, then can be started.

4.3. Over Voltage Protection

it should be after discharge and reinput AC voltage, then can be started.

4.4. Thermal Protection

Power supply shall shutdown and require remove the AC mains input to reset the system.

5. Environment Requirements

5.1. Operating Temperature and Relative Humidity

0℃ to +40℃

10%RH to 90%RH

5.2. Storage Temperature and Relative Humidity

-20℃ to +80℃

5%RH to 95%RH non-condensing @ Sea level shall be low 2,000 meters.

5.3. Vibration

10 to 300Hz sweep at a constant acceleration of 1.0G (Breadth: 3.5mm) for 1Hour for each of the perpendicular axes X, Y, Z.

5.4. Drop Test

Height: 1m; the product should be fell off on the hardwood with the thickness of 20mm, and the hardwood should be put on the base of the cement or on the ground without flexibility. Apply one times on all surfaces, total 6 times. The electric performance and Hi-Pot test must be OK after the drop tests.

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6. Reliability Requirements

6.1. Burn-in

The power supply shall be burn-in for 2 Hours under normal input and 80% rated load at 40℃±5℃. The electric performance and Hi-Pot test must be OK.

7. EMI/EMS Standards

7.1. EMI Standards

EN55032/EN55035

7.2. EMS Standards

7-2-1 EN 61000-4-2, electrostatic discharge(ESD) requirement

Discharge characteristic	Test level	Test criteria
Air discharge	+/-8KV	B
Contact discharge	+/-6KV	B

7-2-2 EN 61000-4-3,radiated electromagnetic field susceptibility(rs)

Test level	Test criteria
3V/m (r.m.s)	A
80-1000MHz,80%AM(1KHz) sine-wave	

7-2-3 EN 61000-4-4,electric fast transients(burst) immunity requirement

Coupling	Test level	Test criteria
AC-input	0.5KV	A
AC-input	1KV	B

7-2-4 EN 61000-4-5,surge capability requirement

Surge voltage	Test criteria
Common mode +/-2KV	C
Differential mode +/-1KV	

7-2-5 EN 61000-4-6,

Induced radio frequency fields conducted disturbances immunity requirement

Test level	Test criteria
3V	A
0.15-80 MHz,80%AM(1KHz)	

7-2-6 Assessment criteria

Acceptance criteria	performance
A	Agreed operational behavior within the specified limits
B	Time limited functional diminishment or malfunction during the tests is permitted. The function is self-reactivated by the unit

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	following completion of the tests.
C	Malfunction is permitted .The function can be reactivated either by reconnection to the mains or by operator intervention.

8. Safety Standards

8.1. Dielectric Strength (Hi-pot)

Primary to Secondary: 3000Vac / 10mA max. / 60second.

Primary to Secondary: 3000Vac / 10mA max. /3S for production.

8.2. Leakage Current

3.5mA max. at 264Vac / 60Hz.

8.3. Insulation Resistance

100MΩ min. at primary to secondary add 500Vdc test voltage.

8.4. Earthing Resistance

Earthing Resistance：Between imput grounding and output grounding impedance is 1MΩ +/-5%.(Multimeter measurement)

8.5. Regulatory Standards

Type	Country	Standard	Statue	Mark
CE	Europe	EN62368-1	APPROVED	

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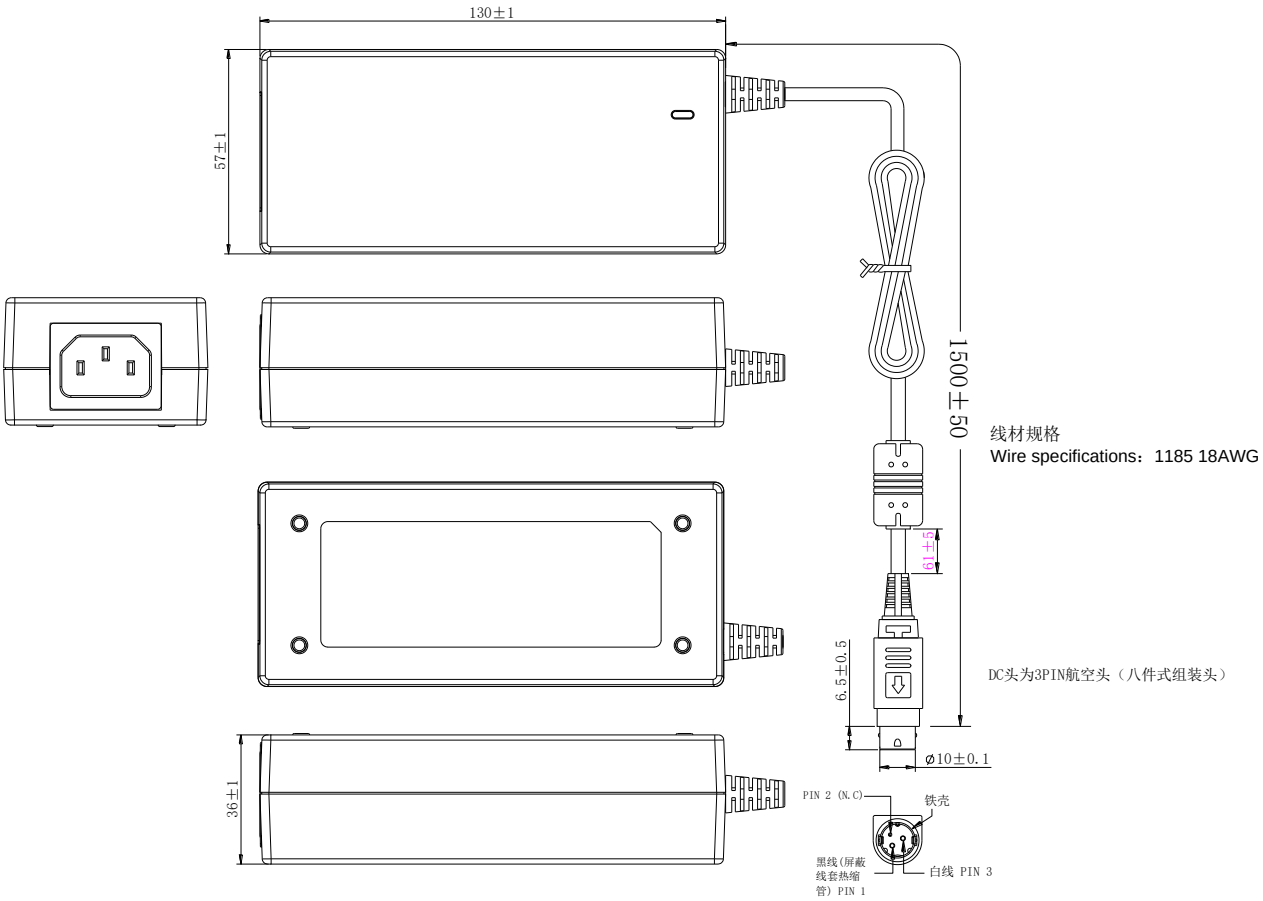
9. Mechanical Outline Drawing



Case material: ☑PC temperature resistance: 120℃

☐PC+ABS temperature resistance: 95℃

Remark: 1)PC material compliances with ball pressure testing requirement.

2)The color of enclosure and DC cable are black(1101M).

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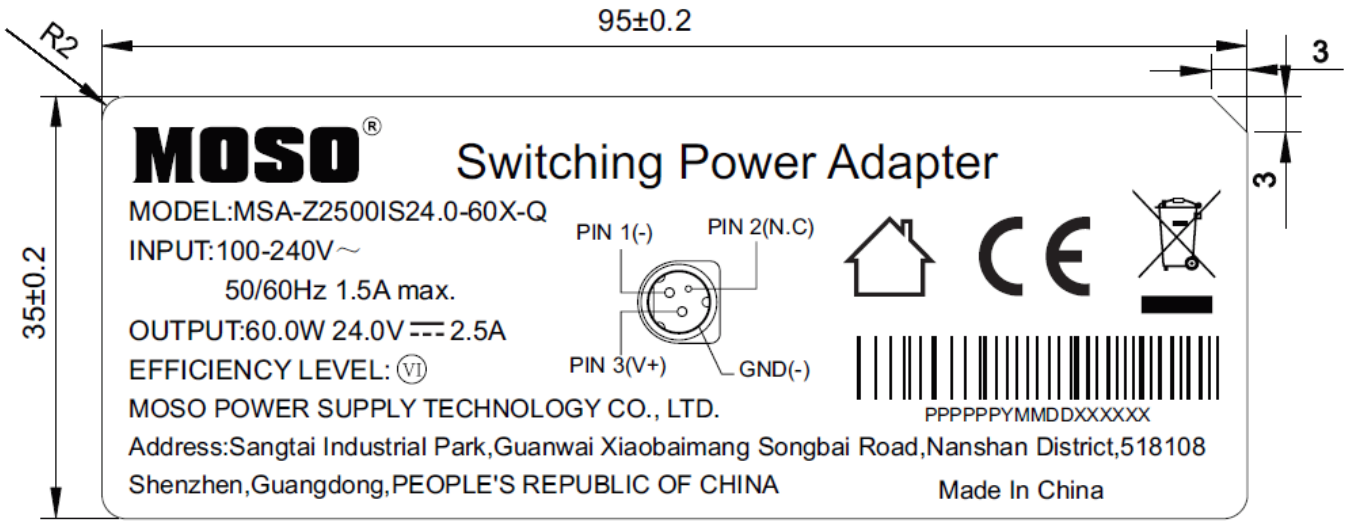
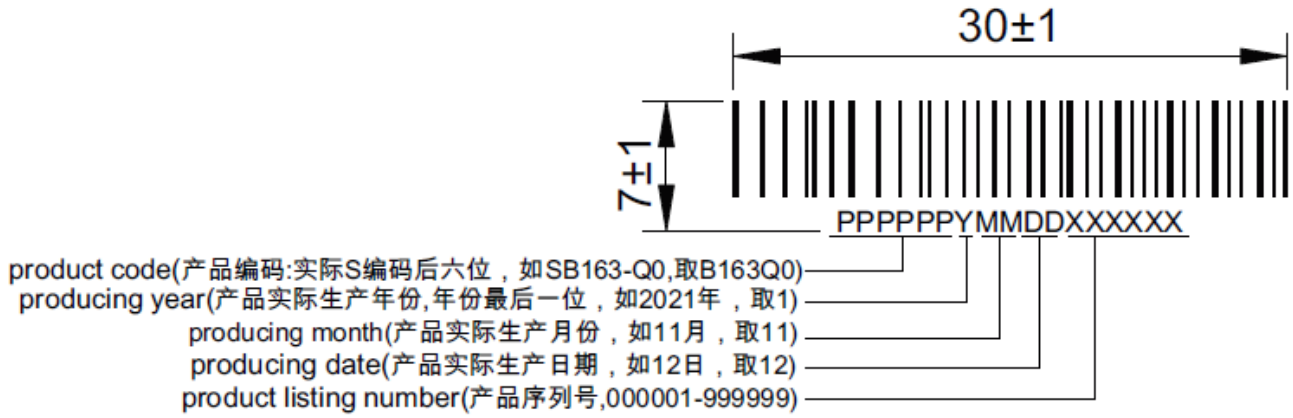
10. I/O Marking Drawing



Remark:
1. Above label is laser engraved.
2. The height dimension of double insulation mark and CE mark can NOT less than 5mm.
3. The height dimension of garbage bin mark can NOT less than 7mm.



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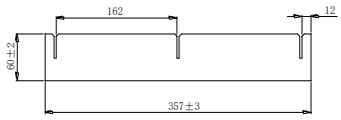
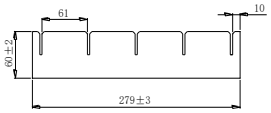
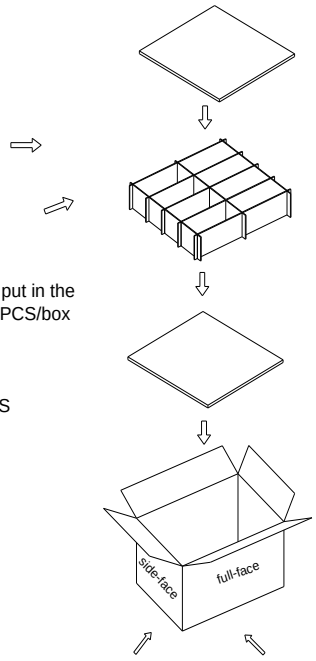
11. Package Drawing



Partitioning card 3:357*60



Partitioning card 5:279*60

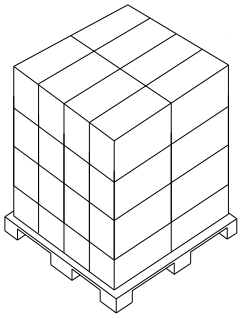


Packing Instruction：

1、the product put in the PE bag ， then the packing product put in the pattitioning card groove，8PCS/floor，4 floors in all，32PCS/box
such as： 8pcs/floor*4floor=32PCS/box

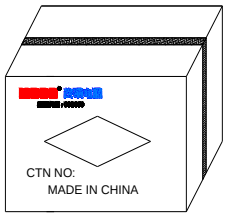
2、the usage of the packing materials：
1) the usage of the three partitioning card 357*60：20PCS
2) the usage of the five partitioning card 279*60：12PCS
3) the usage of the PE bag 250*120：32PCS
4) the usage of the flat 357*279:5PCS
5) carton box 370*290*275：1PCS

3、Pallet stacke instruction:
1) Pallet size is:L1200*W800*H135mm
2) per floor set 8pcs
3) stacke per 4 floor*8pcs carton
total 32 pcs carton



The pallet stack drawing

The outside of box:：370L*290W*275H



The product will be packed in the carton box and the box will be seled by the sticker

The requirement of PE bag packing: ☐PE bag without sealing by adhesive tape.
☐ PE bag with sealing by adhesive tape.
☐Other requirement.

Remark: If the customer has not chose the PE bag packing way,
we will use the PE bag without sealing by adhesive tape.