

## SPECIFICATION FOR REFERENCE

<b>CUSTOMER:</b>	
<b>CUSTOMER P.N.:</b>	
<b>MODEL NO.:</b>	<b>MSA-Z2000WR120-024B0-P</b>
<b>PRODUCT NO.:</b>	<b>SCXXX-P0</b>
<b>SAMPLE DATE:</b>	<b>2024-07-09</b>

### CUSTOMER AUTHORIZED SIGNATURE

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

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**---Table of Content---**

1. SCOPE.....	4
1.1. Description .....	4
1.2. Green Requirements.....	4
1.3. Energy Efficiency Requirements .....	4
2. Input Characteristics .....	4
2.1. Input Voltage & Frequency .....	4
2.2. Input AC Current .....	5
2.3. Inrush Current (cold start) .....	5
2.4. Averaged Efficiency.....	5
2.5. Energy Consumption.....	5
3. Output Characteristics .....	5
3.1. Static Output Characteristics <Vo & R+N>.....	5
3.2. Line/ Load Regulation.....	5
3.3. Turn - on Delay Time.....	5
3.4. Hold-up Time .....	5
3.5. Rise Time .....	5
3.6. Fall Time .....	5
3.7. Output Overshoot / Undershoot .....	5
3.8. Output Load Transient Response .....	5
4. Protection Requirements .....	5
4.1. Over Current Protection .....	5
4.2. Short Circuit Protection.....	6
4.3. Over Voltage Protection .....	6
5. Environment Requirements .....	6
5.1. Operating Temperature and Relative Humidity .....	6
5.2. Storage Temperature and Relative Humidity .....	6
5.3. Sea level 5,000 meters.....	6
5.4. Vibration .....	6
5.5. Drop Test.....	6
6. Reliability Requirements .....	6
6.1. Burn-in .....	6
6.2. MTBF.....	6
6.3. E-caps lifetime .....	6
7. EMI/EMS Standards .....	7
7.1. EMI Standards .....	7
7.2. EMS Standards.....	7
7-2-6 Assessment criteria .....	7

8. Safety Standards .....	8
8.1. Dielectric Strength (Hi-pot) .....	8
8.2. Leakage Current.....	8
8.3. Insulation Resistance.....	8
8.4. Regulatory Standards .....	8
9. Mechanical Outline Drawing .....	9
10. I/O Marking Drawing .....	10
11. Package Drawing .....	11

## 1. SCOPE

The document detail the electrical, mechanical and environmental specifications of a SMPS, the power supply provide 24W continuous output power.

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

### 1.1. Description

- SMPS Adaptor(Wall mount)
  SMPS Adaptor(Desk-top)  
 Open Frame
  SMPS Unit (With Case)  
 Others

### 1.2. Green Requirements

- RoHS:2011/65/EU & (EU) 2015/863;  
 REACH:1907/2006/EC;  
 Halogen-free:IEC 61249-2-21;  
 CA Prop 65;  
 POPs:(EU)2023/1608;  
 PAHs: 2005/69/EC;  
 Packaging Directive:94/62/EC;  
 US EPA Toxic Substances Control Act (TSCA);  
 MOSO Environmental standards: WI-QM006-G;  
 Others

### 1.3. Energy Efficiency Requirements

No.	Country	Energy efficiency abbreviation	Whether it meets the requirements/(YES/ <input checked="" type="checkbox"/> , NO/ <input type="checkbox"/> )
1	USA	DoE VI	<input type="checkbox"/>
2		CEC	<input type="checkbox"/>
3	Canada	NRCAN	<input type="checkbox"/>
4	Australia/New Zealand	GEMS	<input type="checkbox"/>
5	Europe	Erp VI	<input checked="" type="checkbox"/>
6		CoC V5 Tier 2	<input type="checkbox"/>
7	South Korea	KMEPS	<input type="checkbox"/>
8	Mexico	MEPS	<input type="checkbox"/>
9	Byelorussia	MEPS	<input type="checkbox"/>

## 2. Input Characteristics

### 2.1. Input Voltage & Frequency

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

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

## 2.2. Input AC Current

0.7A max. @ 100-240Vac input & Full load.

## 2.3. Inrush Current (cold start)

No damage shall be presented at the cold start.

## 2.4. Averaged Efficiency

86.30% min. @115Vac /230Vac input (@25%, 50%, 75% and 100% of max load).

## 2.5. Energy Consumption

No load Consumption  $\leq 0.1W$  (115Vac/60Hz input, 230Vac/50Hz input).

## 3. Output Characteristics

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

Output Rate	Rated Load		Output Range	R+N	Remark
	Min. Load	Max. Load			
+12.0V	0.0A	2.0A	11.4V~ 12.6V	120mVp-p	100-240VAC

Ripple & Noise: Measurement is done by 20MHz b width oscilloscope paralleled a 0.1uF ceramic capacitor and a 47uF electrolytic capacitor. (test under the condition of rated input and rated output).

### 3.2. Line/ Load Regulation

Output Rate	Load Condition		Line Regulation	Load Regulation	Remark
	Min. Load	Max. Load			
+12.0V	0.0A	2.0A	$\pm 3\%$	$\pm 5\%$	

### 3.3. Turn - on Delay Time

3S max. @ 230Vac input & Full load.

### 3.4. Hold-up Time

10mS min. @ Full load & 115Vac/60Hz input turn off at worst case.

20mS min. @ Full load & 230Vac/50Hz input turn off at worst case.

### 3.5. Rise Time

50mS max. @ Rated load.

### 3.6. Fall Time

50mS 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 11.4-12.6V 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

Over Current Point Limited:  $4A > I > 2.2A$  (100-240Vac)

The output shall hiccup when the over current applied to the output rail, and shall be self-

recovery when the fault condition is removed.

#### **4.2. Short Circuit Protection**

The input power shall decrease when the output rail short, the power supply shall no damage, and shall be self-recovery when the fault condition is removed.

#### **4.3. Over Voltage Protection**

The power supply has to be protected against over voltage conditions. No damage allowed. The power supply must come back to nominal working without on/off powering after removal of the over voltage condition.

### **5. Environment Requirements**

#### **5.1. Operating Temperature and Relative Humidity**

0°C to +40°C

5%RH to 90%RH

#### **5.2. Storage Temperature and Relative Humidity**

-20°C to +70°C

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

#### **5.3. Sea level 5,000 meters**

#### **5.4. 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.

#### **5.5. Drop Test**

Height: 1m; the product should be fell off on the hardwood floor with the thickness of 20mm, Apply one time on all surfaces, totally 6 surfaces. The electric performance and safety test after the drop test must be OK.

### **6. Reliability Requirements**

#### **6.1. Burn-in**

The power supply shall be burn-in for 2 hours under nominal input and 70%~80% load at ambient temperature of 40°C.

#### **6.2. MTBF**

The MTBF of power supply shall be over than 50,000 Hours at 25°C100% load.

@115Vac & 230Vac with full load.

#### **6.3. E-caps lifetime**

The E-caps used in this PSU must be with lifetime of 3 years @25°C@100% load@115Vac/60Hz and 230Vac/50Hz input.

## 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	+/-4KV	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	A
Differential mode +/-2KV	

#### 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 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: 3300Vac / 5mA max. /3S for production

### 8.2. Leakage Current

0.25mA max. at 264Vac /50Hz

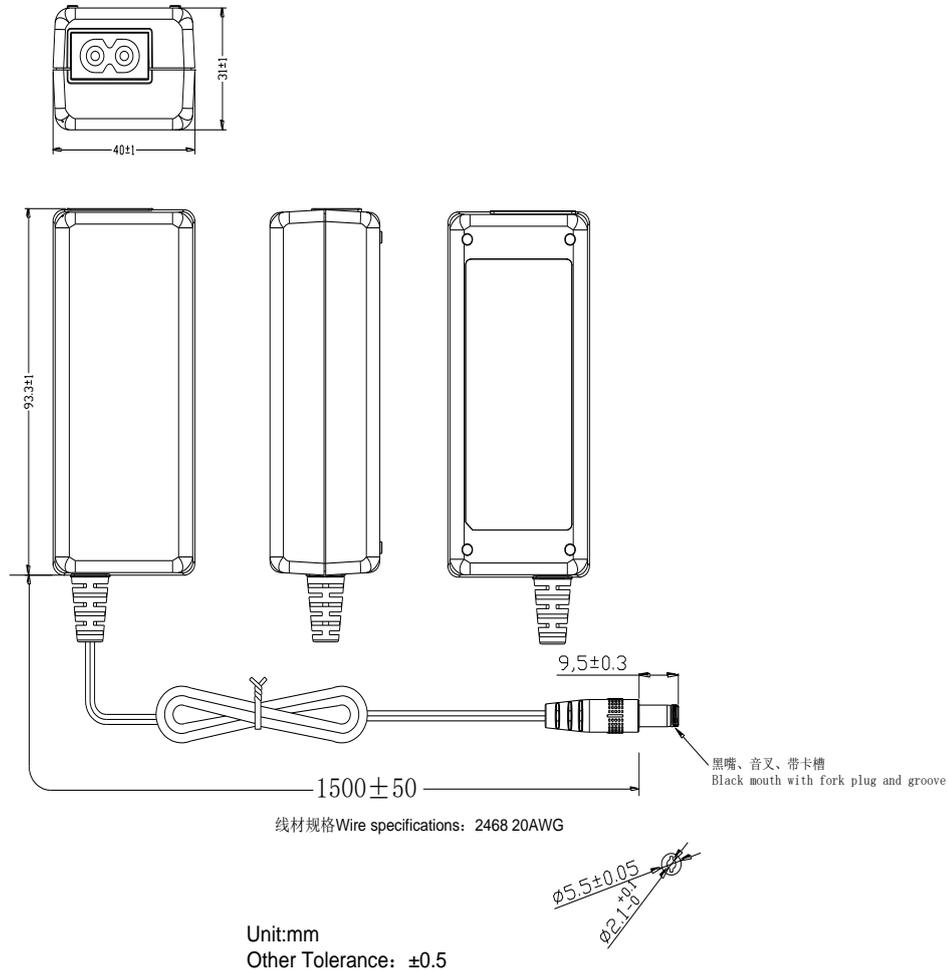
### 8.3. Insulation Resistance

50MΩ min. at primary to secondary add 500Vdc test voltage

### 8.4. Regulatory Standards

Type	Country	Standard	Statue	Mark
CE	Europe	EN62368-1	APPROVED	

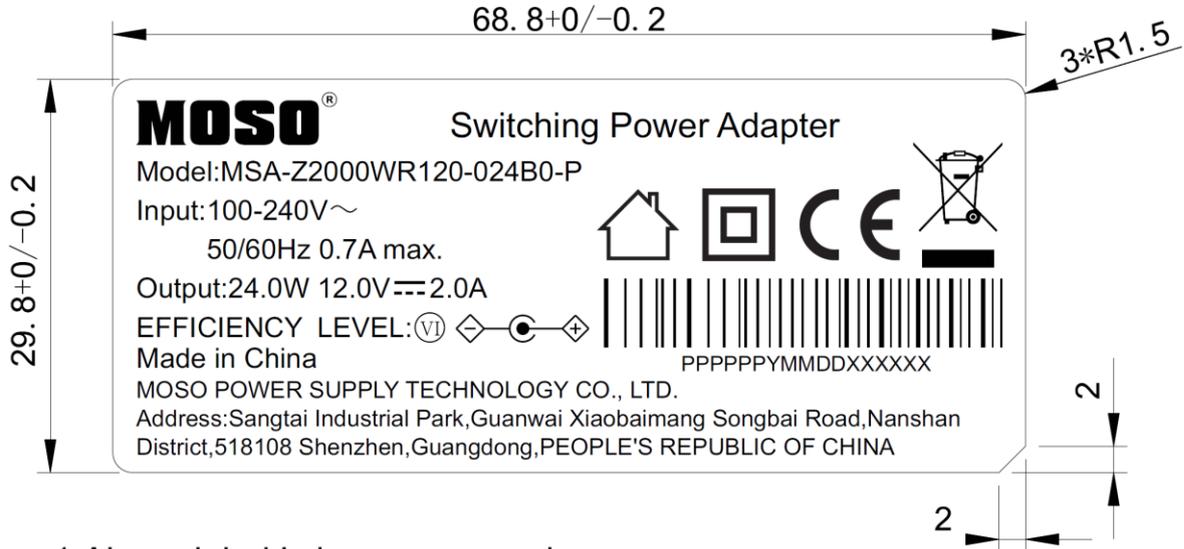
## 9. Mechanical Outline Drawing



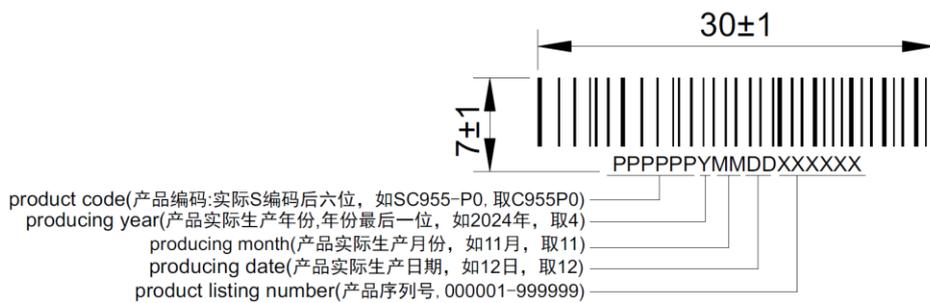
Case material:  PC temperature resistance:  $120^{\circ}\text{C}$ ;  
 PC+ABS temperature resistance:  $95^{\circ}\text{C}$ ;

Remark: 1) PC material compliances with ball pressure testing requirement.  
2) The color of enclosure and DC cable are black.

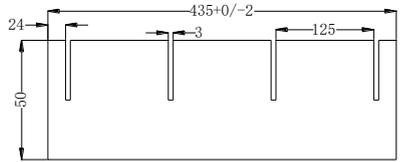
### 10. I/O Marking Drawing



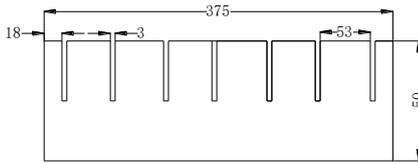
1. Above label is laser engraved.
2. The dimension of double insulation mark can not less than 5mm.
3. The dimension of garbage bin mark can not less than 7mm.



## 11. Package Drawing



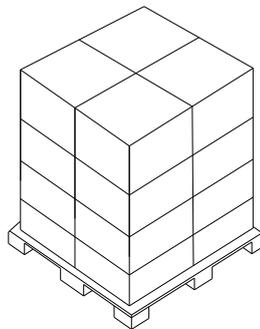
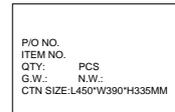
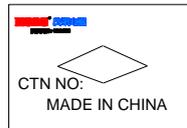
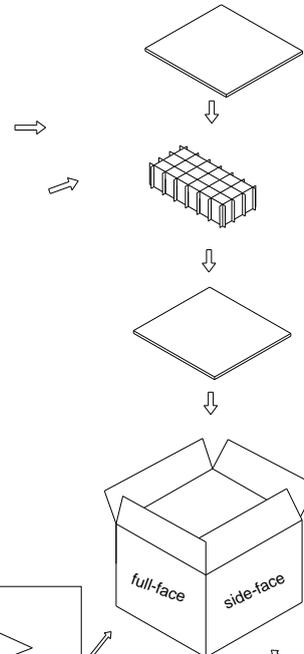
four partitioning card :435\*50



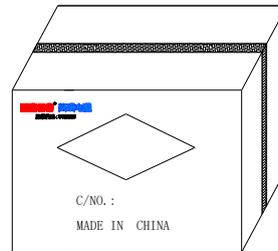
seven partitioning card :375\*50

**Packing Instruction:**

- 1、the product put in the 250\*120 (mm)PE bag , then the packing product put in the partitioning card groove, 18PCS/floor, 6 floors in all, 108PCS/box such as: 18pcs/floor\*6floor=108PCS/box 1pcs=123g
- 2、the usage of the packing materials:
  - 1)the usage of the four partitioning card 435\*50: 42PCS
  - 2)the usage of the seven partitioning card 375\*50: 24PCS
  - 3)the usage of the PE bag250\*120: 108PCS
  - 4)the usage of the flat435\*375:7PCS
  - 5)carton box 450\*390\*335: 1PCS
- 3、Pallet stacke instruction:
  - 1)Pallet size is:L1000\*W800\*H100mm
  - 2)per floor set 4pcs
  - 3)stacke per 4 floor\*4pcs carton total 16 pcs carton



The pallet stack drawing



The product will be packed in the carton box and the box will be sealed 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.