

SPECIFICATION FOR REFERENCE

CUSTOMER: _____

CUSTOMER P.N.: _____

MODEL NO.: MS-V4000R120-050A0-US

PRODUCT NO.: _____

SAMPLE DATE: 2022-03-07

CUSTOMER AUTHORIZED SIGNATURE		

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

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1. SCOPE

The document detail the electrical, mechanical and environmental specifications of a SMPS, the power supply provide 48W continuous output power.

The power supply shall meet the RoHS &WEEE&Lead Free 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

1.3A max. @ 100-240Vac input & Full load.

2.3. Inrush Current (cold start)

60A max. @ 120Vac input

120A max. @ 230Vac input

2.4. Averaged Efficiency

87.77% min. @115Vac 60Hz input (@25%, 50%, 75% and 100% of max load)

88.97% min. @230Vac 50Hz input (@25%, 50%, 75% and 100% of max load)

2.5. Energy Consumption

No load Consumption $\leq 0.1W(115Vac/60Hz)$

No load Consumption $\leq 0.075W(230Vac/50Hz)$

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	4A	11.4V~ 12.6V	120mVp-p	100-240V

Ripple & Noise: Measurement is done by 20MHz bandwidth oscilloscope and the output 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	4A	$\pm 2\%$	$\pm 5\%$	

3.3. Turn - on Delay Time

3S max. @ 100Vac to 240Vac 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

30mS max. @ Rated load.

3.6. Fall Time

30mS 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: 0.1A/uS,
Frequency: 100Hz duration and 8mS at 80%.

4. Protection Requirements

4.1. Over Current Protection

Over Current Point Limited: $I > 4.4A$ (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

10%RH to 90%RH

5.2. Storage Temperature and Relative Humidity

-20°C to +85°C

10%RH to 90%RH

5.3. Altitude: Sea level to 5,000 meters.

5.4. Product Quality Guarantee Period: 3 Years

5.5. Acoustic Noise Test

PSU must not emit acoustic noise greater than 23dBA under any operation condition.
(Based on ISO7779 100cm test environment.)

5.6. 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.

5.7. Drop Test

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

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°C ± 5°C. the electric performance and Hi-Pot test must be OK.

6.2. MTBF

The MTBF of power supply shall be over than 100,000 Hours @ 25°C 100% Load & 115Vac/230Vac input.

Reference standard: SR-332

6.3. E-caps lifetime

The E-caps used in this PSU must be with lifetime of 3year @ 25°C full load &115Vac/230Vac input.

7. EMI/EMS Standards

7.1. EMI Standards

FCC Part 15

7.2. EMS Standards

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

Discharge characteristic	Test level	Test criteria
Air discharge	+/-8KV	A
Contact discharge	+/-4KV	A

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	1KV	B
AC-input	1KV	B

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

Surge voltage	Test criteria
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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(when safety testing).

Primary to Secondary: 3300Vac / 5mA max. /3S for production.

8.2. Leakage Current

0.25mA max. at 264Vac / 60Hz.

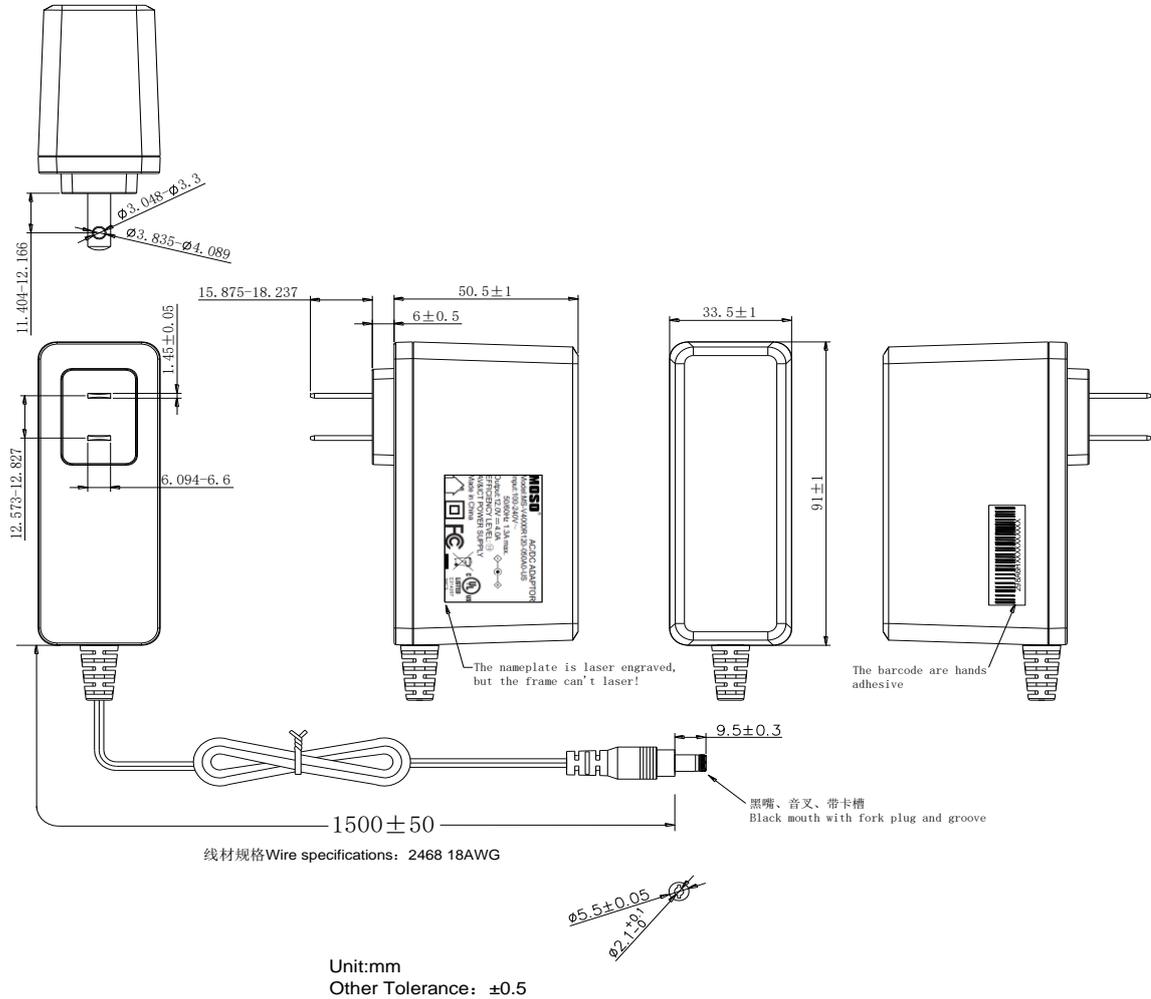
8.3. Insulation Resistance

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

8.4. Regulatory Standards

Type	Country	Standard	Statue	Mark
UL	USA	UL62368-1	APPROVAL	

9. Mechanical Outline Drawing



Case material: PC temperature resistance: 120°C.

PC+ABS temperature resistance: 95°C.

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

2)The color of enclosure and DC cable are Black.