CUSTOMER JAMES

SPECIFICATION FOR APPROVAL

AC/DC ADAPTOR

CUSTOMER SPEC:INPUT: 100-240V AC 50/60Hz OUTPUT:12VDC 2000mA

CUSTOMER DWG./PART NO. **Wall Mount, UL,5.5X2.5X10mm,1.22m**

PART NO. **S024-1B120200VU**

SAMPLE NO: **M2200763** **REV.:** _____ **ISSUE** **DATE: 2022-9-22**

PRDUCT NO: **SN00763DG**

Unit Color: Black ☑ **White** ☐

APPROVED SIGNATURES/客户确认		
核准/APPROVED BY	审核/ CHECKED BY:	检测/TESTED BY:

Manufacturer/制造商			
业务/SALES	品管/QE	核准/APPROVED BY	制样/DESIGNED BY
EDDY 袁	周松平	宋军	阳灿

Von Development Ltd. 旺怡發展有限公司

1A, Fook Ying Bldg, 379 Kings Road, North Point, Hong Kong

TEL: 852-2187-2875 **FAX: 852-3012-1881**

info@vonhk.com

Record of Revision

REV.	Description of Change(s)	Changed Date
1.0	Initial Release	13th.September.2022

Notice of Deviation

Customer Request	Submitted Sample	Mass Production

TABLE OF CONTENT

1.0 SCOPE

This document details the electrical, mechanical and environmental specifications of a switching power supply 24 watts of 12V which will be used, power supply is 2Pin input.

1.1 DESCRIPTION

- ☑ WALL MOUNT
- ☐ DESK-TOP
- ☐ INTERCHANGEABLE AC PLUG
- ☐ OPEN FRAME
- ☐ POWER SUPPLY UNIT (WITH METAL CASE)
- ☐ OTHERS

2.0 INPUT CHARACTERISTIC

2.1 INPUT VOLTAGE RANGE

MIN.	NORMAL	MAX.
90Vac	100-240Vac	264Vac

2.2 INPUT FREQUENCY RANGE

MIN.	NORMAL	MAX.
47Hz	50/60Hz	63Hz

2.3 INPUT CURRENT

The maximum input current is 0.6A RMS at 100Vac input & full-load.

2.4 INRUSH CURRENT

Inrush current should not cause I^2T of fuse and rectifier diode to exceed specification and power supply should not be damaged during 100-240VAC, 25℃ cold start.

2.5 POWER CONSUMPTION

The input power should be less than 0.1W with output 0A at 115/230Vac input.

2.6 EFFICIENCY

86.20% min. @ average of 25%, 50%, 75%, 100% load at 115Vac 60Hz / 230Vac 50Hz input. (Meet DOE VI)

3.0 OUTPUT CHARACTERISTIC

3.1 STATIC LOAD

Output Voltage	Total Regulation	Load Range		
		MIN.	MAX.	Peak
12V	11.4-12.6V	0A	2A	/

3.2 RIPPLE & NOISE

The maximum ripple must be less than 150mVp-p when subjected to the following conditions:

1). Bandwidth: 20MHz

2). Add a 47uF/50V (Low ESR) electrolytic capacitor in parallel with a 100nF/50V ceramic capacitor at the point of output load.

3). Line Voltage: 90Vac, 115Vac, 230Vac, 264Vac

4). Output Load: 0, 25%, 50%, 75%, 100%

5). Ambient: 25℃

3.3 TURN ON DELAY TIME

Measure output delay time at the rated load by 100~240Vac condition 4sec Max.

3.4 HOLD UP TIME

10msec minimum from loss of 115Vac/60Hz input at maximum load

3.5 RISE TIME

The output voltage shall rise from 10% to 90% of nominal to within the regulation ranges within 30mS at Full load @ 90Vac, 115Vac, 230Vac, 264Vac input.

3.6 OVERSHOOT & UNDERSHOOT

The overshoot shall less than 10% of nominal voltage at power on stage, recovery less than100mS, when turn off the unit, the output voltage undershoot shall not happen.

3.7 TRANSIENT RESPONSE

The overshoot and undershoot should be less than ±10% of the nominal output voltage.

test condition:

Slew rate: 0.15A/uS, 50%~100%~50% of maximum load

T1=T2=5mS, 115Vac/60Hz, 230Vac/50Hz input.

3.8 LINE REGULATION

The line regulation of rated output voltage is less than ±5% while measuring at rated load and +/-10% of input voltage changing.

3.9 LOAD REGULATION

The load regulation of rated output voltage is less than ±5% at measured output load from 10% to 100% rated load

4.0 PROTECTION REQUIREMENT

4.1 OVER VOLTAGE PROTECTION

The power supply shall be hiccupped when output voltage reaches to its over – voltage protection trigger point 18V Max.

☐ The power supply shall fail but safe – the input power shall be less than ___W.

☑ The power supply shall be self – recovering when the fault condition is removed.

☐ The power supply will go into latch-off mode, and have to OFF and ON the AC input to restart the power supply.

4.2 OVER CURRENT & SHORT CIRCUIT PROTECTION

The power supply shall be hiccupped when operating any output in overload condition (4A Max.), or when operating any output in a short circuit condition.

☐ The power supply shall fail but safe – the input power shall be less than ___W.

☑ The power supply shall be self – recovering when the fault condition is removed.

☐ The power supply will go into latch-off mode, and have to OFF and ON the AC input to restart the power supply.

5.0 ENVIRONMENTAL CONDITIONS

5.1 OPERATING

The power supply shall be capable of operating continuously in any mode without performance deterioration in the following environmental conditions.

5.1.1 Ambient Temperature: 0℃ ~40℃ @ full load

5.1.2 Relative Humidity: 20% ~ 98% Non-Condensing

5.1.3 Altitude: Sea level to -50m ~ 5000m.

5.2 NON - OPERATING

The power supply shall be capable of withstanding the following environmental conditions extended periods of time, without sustaining electrical or mechanical damage and subsequent operational deficiencies:

5.2.1 Ambient Temperature: -20℃ ~ +80℃

5.2.2 Relative Humidity: 20% ~ 98% Non-Condensing

5.2.3 Altitude: Sea level to -50m ~ 5000m.

6.0 ELECTRO MAGNETIC COMPATIBILITY

6.1 EMI STANDARDS

The power supply shall meet the radiated and conducted emission requirements for FCC part 15 CLASS B

6.2 EMS STANDARDS

The power supply shall meet the following EMS standards EN55035

6.2.1 EN61000-4-2 Electrostatic Discharge (ESD)

Static – discharge test by contact or air should be conducted with Static – discharge teeter, energy storage capacitance of 150pF, and discharge resistance of 330Ω.

4KV contact discharge, 8KV air discharge,

Performance Criterion A

6.2.2 EN61000-4-3 RADIATED ELECTROMAGNETIC FIELDS (RS)

Radio- frequency Electromagnetic Field Susceptibility Test, RS, 80-1000MHz, 3V/m, 80%AM(1KHz), Performance Criterion A.

6.2.3 EN61000-4-4 Electrical Fast Transient / Burst (EFT)

Power Line to Line: 1KV

Line to earth: 1KV

Performance Criterion A

6.2.4 EN61000-4-5 Lightning Surge (1.2/50uS-8/20uS Combination Wave)

Lightning Surge voltage of differential and common modes shall be applied across AC input lines and across input and frame ground.

Power Line to Line: 1KV

Line to Earth: 1KV

Performance Criterion A

6.2.5 EN61000-4-6 CONDUCTED RADIO FREQUENCY DISTURBANCES (CS)

Conducted Radio Frequency Disturbances Test, CS, 0.15-80 MHz, 3Vrms, 80%AM, 1 KHz, Performance Criterion A.

7.0 RELIABILITY AND QUALITY CONTROL

7.1 MTBF

The MTBF shall be at least 50,000 hours at 25℃, full load, 115Vac/60Hz and 230Vac/50Hz input, following SR-332 issue03(2011).

7.2 BURN-IN

The power supply shall undergo a minimum of 4 hours Burn-In test at 40℃ ±5℃ under full load and nominal input voltage for QA test.
The power supply shall undergo a minimum of 2 hours Burn-In test at 40℃ ±5℃ under full load and nominal input voltage for mass production.

7.3 ELECTROLYTIC CAPACITOR LIFE TIME

The life time of Electrolytic Capacitor should be greater than 2 years under 120V 60Hz/ 230V 50Hz input @25℃ ambient condition with full load.
The Electrolytic Capacitor life calculated base on actual temperature measurement and shall take into account all factors which affect life base on each capacitor vendor’ s Electrolytic Capacitor life formula.(For example capacitor temperature and ripple current).

7.4 DROP TEST

All types of wall mount and desktop power supply products are required to have a drop test to be verified.
The testing height must be 100cm +/-1cm from the ground, drop one times for each welding side of the product (total 6 times), drop on the 30mm hardwood surface.
All power supply products must meet the requirement on the specification and do not have any isolation broken.

8.0 MECHANICAL

8.1 INPUT AND OUTPUT CONNECTOR ASSIGNMENT

The power supply shall provide input connectors as in table 8.1

PIN#	Polarity
1	Line
2	Neutral

Table 8.1 Top view of AC input Pin assignment

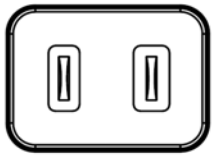


Table 8.2 Top view output Pin assignment

8.2 PHYSICAL DIMENSIONS

The detail dimension of the power supply, please see attachment.

Case with Red LED Light

8.3 LABEL

The label of the power supply, please see attachment.

8.4 WEIGHT

The weight of the power supply shall be Approx 127g ±5%.

8.5 CONNECTOR TYPE

AC INPUT	UL 2PIN
DC OUTPUT	5.5*2.5*10mm, Fork & Groove UL2468, 22AWG, 1220mm

9.0 SAFETY

9.1 REGULATORY STANDARD

The power supply shall be certified under the following international regulatory standards:

	Country	Certified Status	Standard
UL/cUL	America / Canada	Approved	UL 62368-1 / CSA C22.2

9.2 INSULATION RESISTANCE

Input to output: Min. 10M OHM at 500VDC.

9.3 DIELECTRIC STRENGTH (HI-POT)

Primary to Secondary (Without Ground): AC 3000V , 10mA Max , 1 minute for type test .

Primary to Secondary (Without Ground): AC 3600V , 10mA Max ,2S for production

Note: The negative of secondary is connected with Ground.

9.4 LEAKAGE CURRENT

The leakage current shall be less than 0.25mA, when power supply is operated maximum input voltage and maximum load.

10.0 ENVIRONMENTAL COMPLIANCE

10.1 RoHS

Meet 2011/65/EU directive and its amendment (EU) 2015/863

10.2 Packaging

Meet EU94/62/EC directive

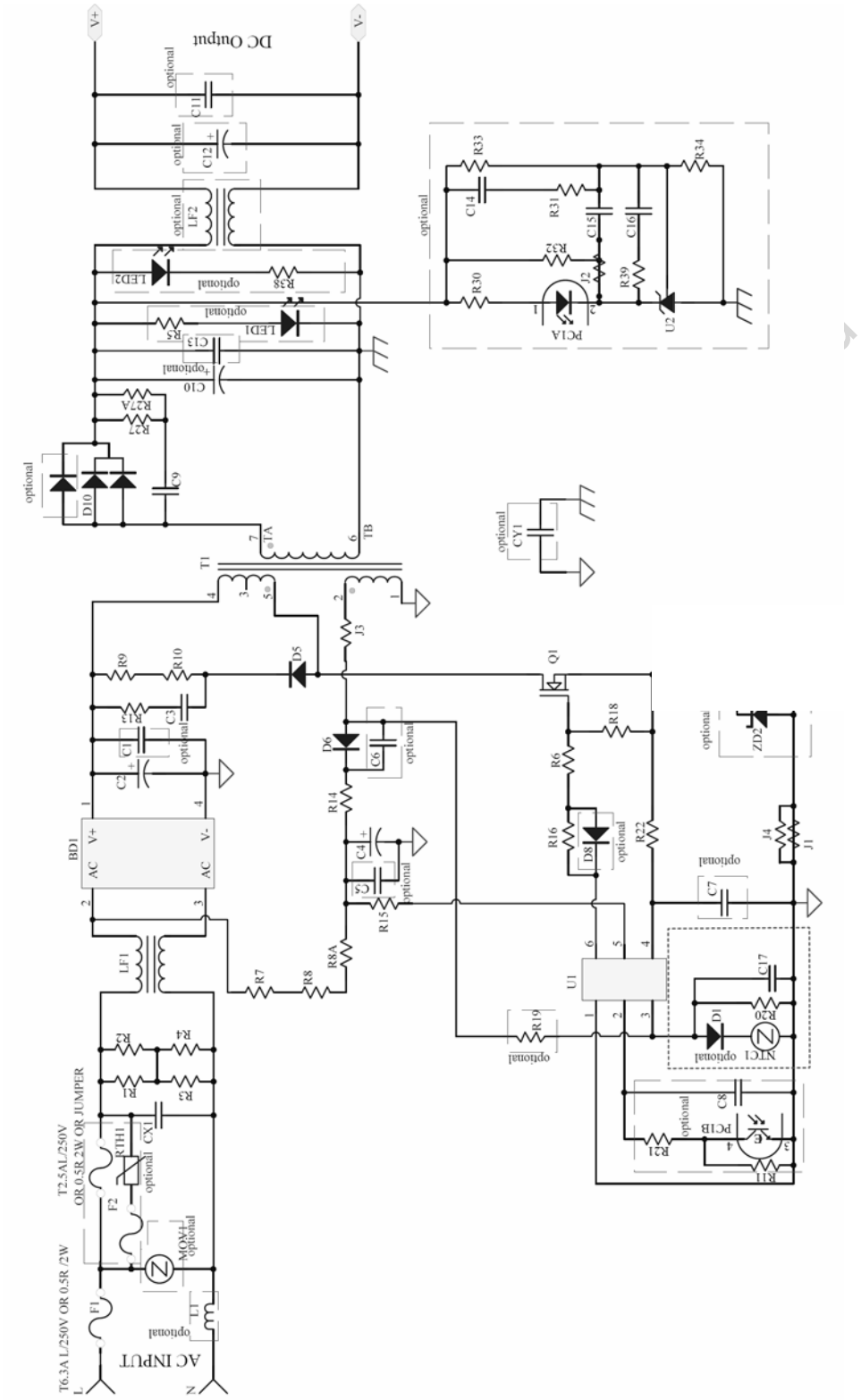
10.3 REACH

Meet EU 2006/1907/EC directive

10.4 WEEE (Waste Electrical and Electronic Equipment)

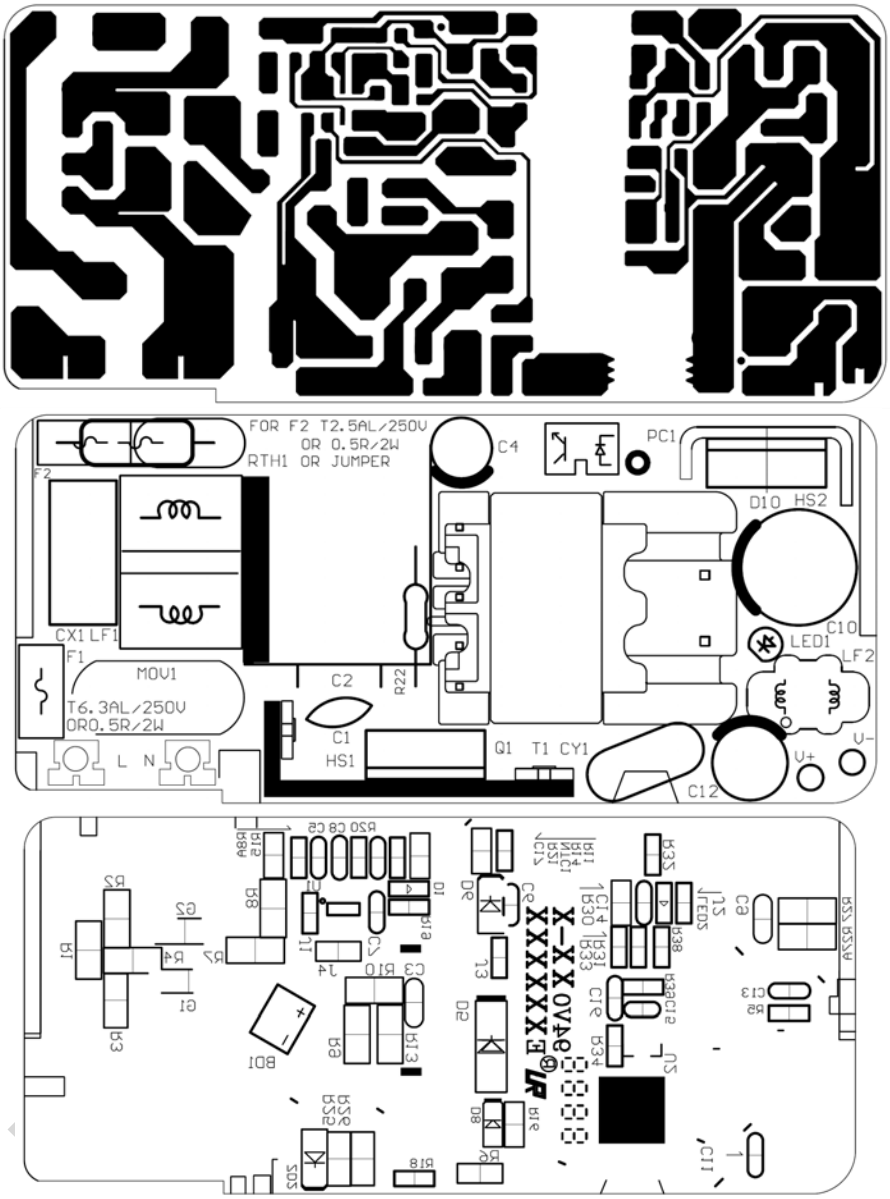
Meet EU 2012/19EC directive

11.0 CIRCUIT SCHEMATIC



ISSUE DATE:	Sales BY:	DESIGNED BY:	APPROVED BY:
13th.September.2022	周露	周佳	罗赞兴
MSP PN.:	**ITEM No.:**	**MODEL No.**	**SHEET:**
SN00763DG	Specification	S024-1B120200VU	Page 14 of 21

12.0 PCB LAYOUT



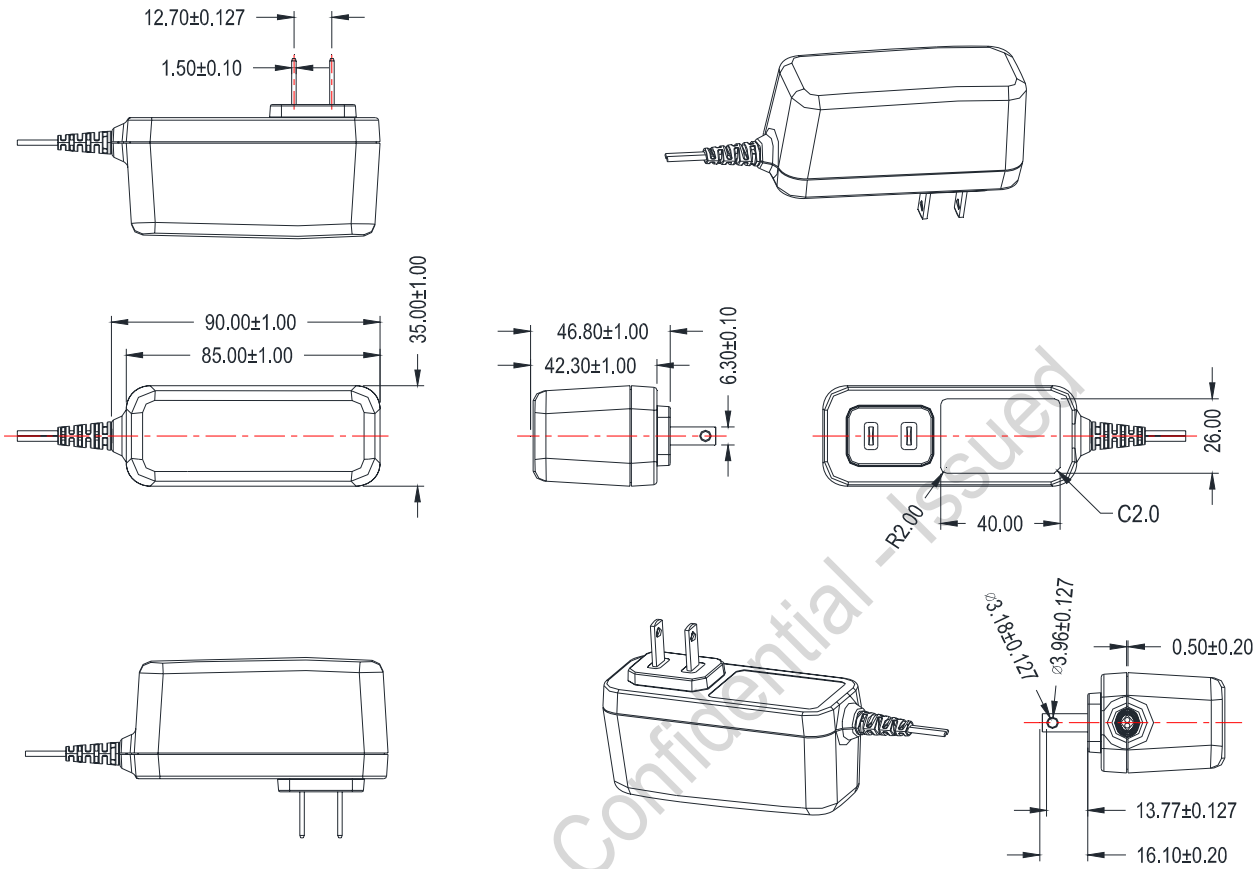
Notes:

PCB white area laser QR code

The QR code’ s number have nine digits，For Example：123456789

1. Number 1, means laser machine No.: 1~9, A~Z(no include I,O)
2. Number 2, means Year, 1~9,A~Z(no include I,O), for example “9 for 2019” A” for 2020
3. Number 3, means Month,1~9 for Jan to Sep, “A” for Oct, “B” for Nov, “C” for Dec
4. Number 4, means Date,1~9,A~X(no include I,O),for example “9AA” for 2019/10/10
5. Number 5 to 8, means serial number: 1~9, A~Z(no include I,O), first number:0001
6. Number 9，means PCB code：1~9， A~Z(no include I,O)

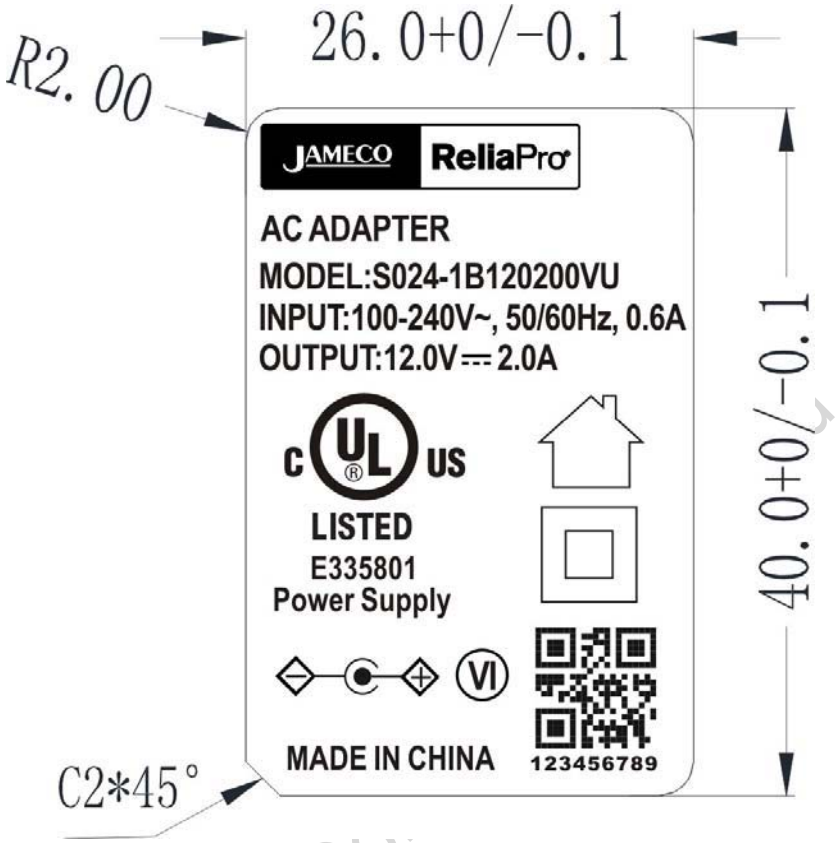
13.0 OUTLINE DRAWING



Notes:

1. Physical size: 90.00±1.0mm(L)* 35.00±1.0mm(W)* 46.80±1.0mm(H)
2. Unit: mm
3. Material: PC945, UL94V-0
4. Color: BLACK
5. AC Input Plug: UL

14.0 NAMEPLATE



Notes:

Unit: mm

1.Laser

The QR code’ s number have nine digits，For Example：123456789

Number 1 to 2, means laser mechine No.:per code 1~9, A~Z(no include I,O)

Number 3, means Year, 1~9,A~Z(no include I,O), for example “9” for 2019,” A” for 2020

Number 4, means Month,1~9 for Jan to Sep, “A” for Oct, “B” for Nov, “C” for Dec

Number 5, means Date,1~9,A~X(no include I,O),for example “A5G” for 2020/05/16

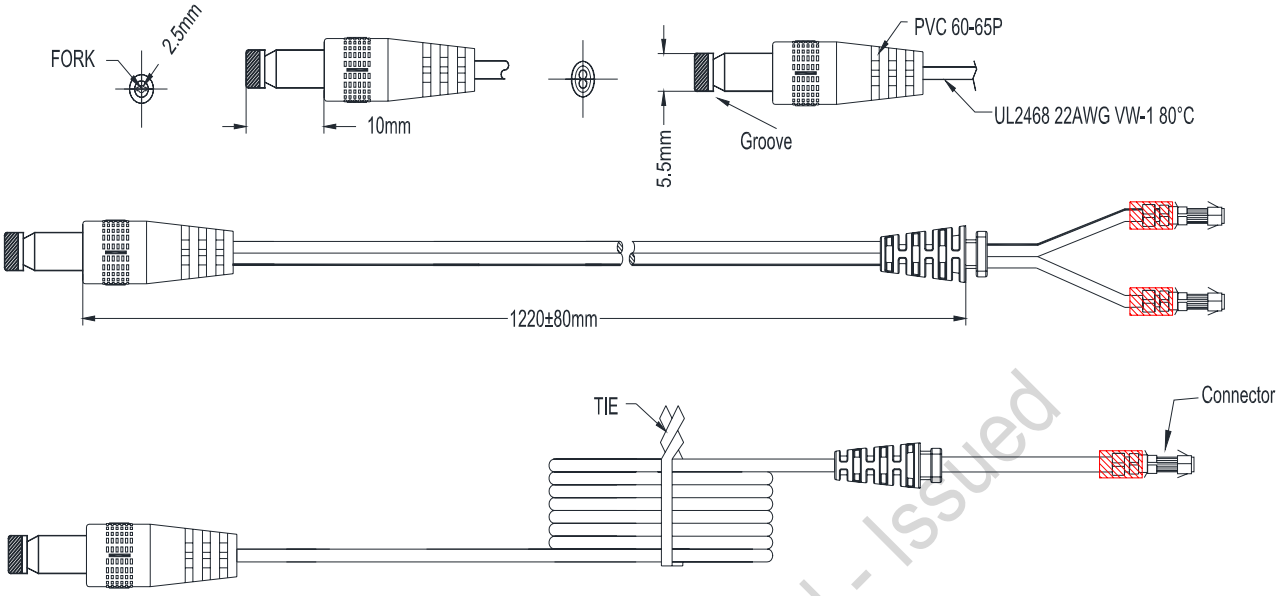
Number 6 to 9, means serial number: 1~9, A~Z(no include I,O)

QR code size:7mm*7mm，type：QR Code

Digit Size:0.9mm(H)（±0.5mm)

The distance from QR code size to the digit size:0.5-1mm

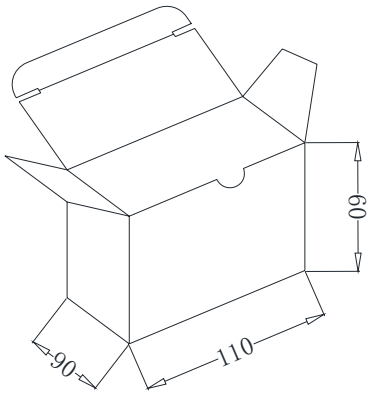
15.0 DC CABLE DRAWING



1. DC Plug: 5.5±0.05mm * 2.5+0.1/-0mm *10±0.5mm , Fork&Groove 
2. Wire: UL2468 , 300V ， 80℃ ， 22AWG ， 1220±80mm
3. Polarity: BLACK and WHITE----Positive, BLACK----Negative
4. DC Jack: PVC

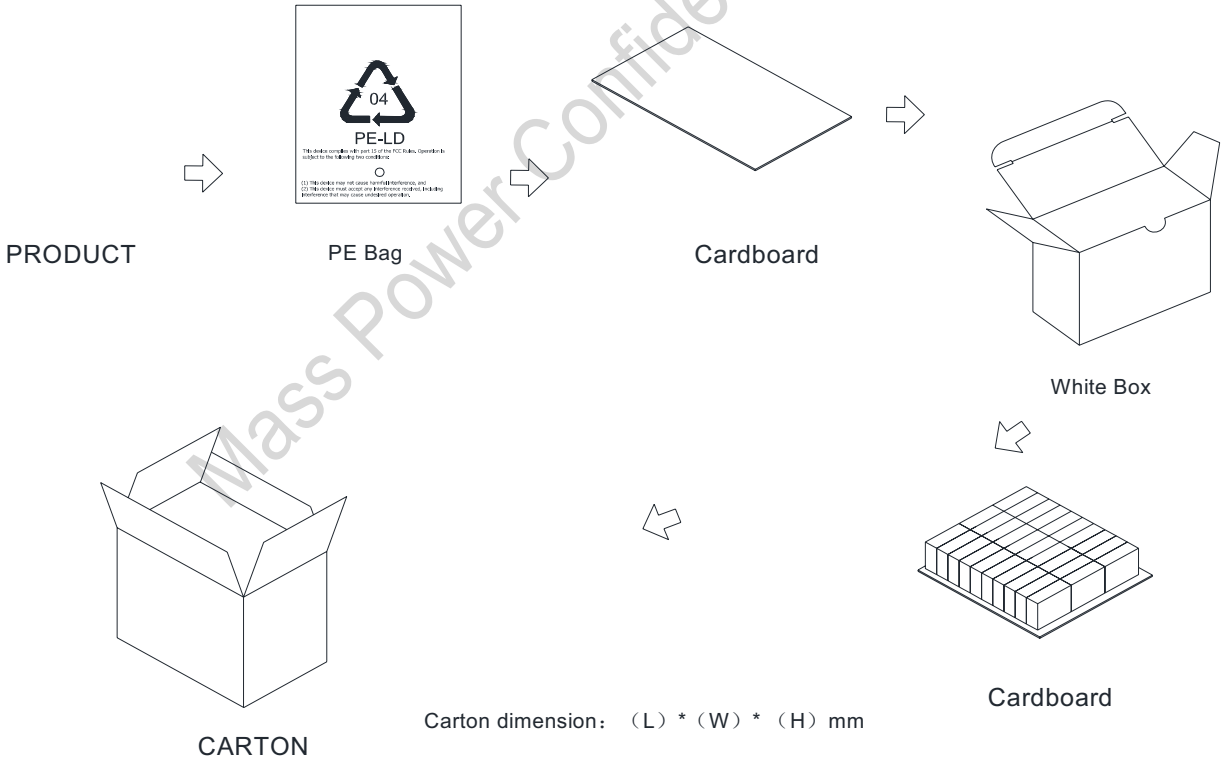
16.0 PACKING DRAWING

6.1 White Box



1. Unit: mm
2. Size: 110±1mm *90±1mm*60±1mm
3. Material: 350g

6.2 Croton



CERTIFICATE OF COMPLIANCE

Certificate Number	20180911-E335801
Report Reference	E335801-A6005-UL
Issue Date	2018-SEPTEMBER-11

Issued to:

MASS POWER ELECTRONIC LTD
10TH FL, TOWER A BILLION CENTRE
1 WANG KWONG RD
KOWLOON BAY
KOWLOON HONG KONG
HONG KONG

This is to certify that representative samples of

Power Supplies for Use in Audio/Video, Information and Communication Technology Equipment

AC ADAPTER, Models S024-1BxxxyyyHU, S024-1BxxxyyyVU, S024-1BxxxyyyD5, S024-1BxxxyyyM2

(xxx=090-150 or 180-240, indicates rated output voltage range 9.0-15.0 or 18.0-24.0Vd.c.,with step 0.1Vd.c., yyy=005-266, indicates rated output current range 0.05-2.66A,with step 0.01A)

Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.

Standard(s) for Safety:

UL 62368-1, Audio/Video, Information and Communication Technology Equipment Part 1: Safety Requirements
CSA C22.2 No. 62368-1-14, Audio/Video, Information and Communication Technology Equipment Part 1: Safety Requirements

Additional Information:

See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program
UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at http://ul.com/aboutul/locations/

ISSUE DATE:	Sales BY:	DESIGNED BY:	APPROVED BY:
13th.September.2022	周露	周佳	罗赞兴
MSP PN.:	**ITEM No.:**	**MODEL No.**	**SHEET:**
SN00763DG	Specification	S024-1B120200VU	Page 20 of 21

FCC Part 15 Verification

No.8,JinQianLing street 5,DongHuan Road,
Huangjiang Town,Dongguan,China.

Te l: 86-769-39001678
Fax: 86-20-62824387
www.i-testlab.com

No. ITL- D210430003-1

Applicant	:	**Mass Power Electronic Limited**
Address	:	10/F, Tower A, Billion Centre 1 Wang Kwong Road, Kowloon Bay, Kowloon, Hong Kong
Product	:	**AC Adaptor**
Model No.	:	**S024-1BxxxyyyHU; S024-1BxxxyyyVU; S024-1BxxxyyyD5; S024-1BxxxyyyM2 (More details see test report)**
Technical data	:	100-240V～ or 100-120V～, 50/60Hz, 0.6A

The above product, has been type- tested for compliance with
Conducted Emissions with limits described at FCC Part 15B Class B per section 15.107
Radiated Emissions with limits described at FCC Part 15B Class B per section 15.109
in a Listed test laboratory according to FCC rules section 2.948 for measuring devices under Parts 15. Enclosed please find the verification test report.

For home or office use

Approved By:
ITL CO., LTD

Signature:
Date: Apr. 30, 2021

ITL CO., LTD Test Report No. D210430003