APPROVAL SHEET

CUSTOMER	鈺緯
CUSTOMER P/N	3ZAD12V50R0(Z0524)
DESCRIPTION	**12V/5A**
EDAC MPN	**EM10681N(36)**
EDAC MODEL NO FOR SAFETY	**EM10681N**
DATE	**2023-07-15**
REVISION	**0**

APPROVED	DESIGN	PREPARE	RoHS
蔡朝豐	鄧長根	鄧長根	
CONCLUSION **判定結果**	**APPROVED** **承認**	**CONDITON APP'D** **有條件承認**	**CUSTOMER'S SIGNATURE:** **客戶簽章:**

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SUBJECT: SCOPE OF DOCUMENT

CONTAINS :

1-0 General Description

2-0. Input Requirements

3-0. Output Requirements

4-0. Reliability

5-0. Environment

6-0. Safety

7-0. Mechanical Characteristics

1-0. General Description

The purpose of the document is to specify a Single phase AC input, single output switching power supply. This specification is suitable for: **EM10681N**Series
This product is AC to DC switching power transfer device, it can provide for a **12V, 5A** max & **60W** max DC output with constant voltage source.
This Specification defines the input, output, performance characteristics, environment, noise and safety requirement for a power supply.

2-0. Input Requirements

2-1. AC Input Voltage

Maximum Voltage: 264Vac
Normal Voltage: 100~240Vac
Minimum Voltage: 90Vac

2-2. AC Input Frequency

Maximum Frequency: 63Hz
Normal Frequency: 50~60Hz
Minimum Frequency: 47Hz

2-3. Input Current

2.0A (Max.) @ 100Vac/60Hz-240Vac/50Hz with full load.

2-4. Energy saving standards:

2-4-0.Designed to meet the following standard :

DoE Level VI

2-4-1.Efficiency

≧**88%** (avg.) at 115Vac/60Hz & 230Vac/50Hz input voltage and 25%, 50%, 75% &100% of max output current.

2-4-2 No Load Power Consumption.

No Load Watt < =**0.21**W at normal line input.

2-5. Configuration

3-wire AC input (Line ,Neutral,FG)

2-6. Input Fuse

The hot line side of the input shall have a fuse, rating (T3.15A/250V)

2-7. Inrush Current

≦ **80A** at 110 Vac At cold start, maximum load
≦ **160A** at 220 Vac At cold start, maximum load.

2-8. Line Regulation

This line regulation is less than ± **1**%, of rated output voltage @ full load.

2-9. Hold Up Time

≧ **8.3 mSec.**, @ Normal line, with full load.

2-10. Rise Time

≦**50 mSec**., @ 115V AC input, with full load.

From 10% to 90% of output voltage.

2-11. Turn-ON Time

The output voltage should rise to 90% of rated output voltage in less than **3 SEC.** from AC apply to 110Vac start up.

3-0. Output Requirements

3-1. Output Voltage and Current

Output Voltage (Vdc)	Current Min.(A)	Current Max.(A)
+12V	0	5A

3-2. Load Regulation

Voltage (Vdc)	Tolerance (%)	Regulation (Vdc)
+12V	+5/, -5	11.4~12.6V

3-3. Dynamic Load Regulation

±5% excursion for **50% - 100%** or **100% - 50%** load change of DC output at any frequency up to 1KHz(duty 50%)

3-4. Ripple & Noise

The power supply shall not exceed the following limits on the indicated voltage for 60Hz or 50Hz ripple, Switching frequency ripple and noise and dynamic load variations measured with a 20MHz bandwidth

Output	Ripple/Noise
+12V	**240mV**

Input condition : for rated voltage , Output condition : for max load
Ripple / Noise: 60Hz ripple + switching ripple and noise
Ripple & Noise are measured at the end of output cable which are added a 0.1uF ceramic capacitor and a 47uF electrolytic capacitor

3-5. Over Voltage Protection

175% Max. of rated voltage.
The output voltage shall be shutdown and auto-recover mode when OVP occurred.

3-6. Over Current Protection

110~200% output current. At 100-240Vac input,
The adapter can withstand continuous short at DC output and no damage.
It will enter into normal condition if the fault condition is removed.

3-7. Stability

2% Max. at constant load with constant input (after **30 minutes** of operation).

3-8.Temperature Rise (Optional)

Less than 45℃ on top/bottom case at normal AC input & 100% load of DC output at environment temperature 25℃.

3-9. Drop-out

Output voltage shall remain within the specified regulation range, through the absence of a line input during 1/2 cycle, at full load and normal AC line input

3-10. Voltage Isolation

The DC ground will be isolated from the AC neutral and AC line.

4-0.Reliability

4-1. MTBF (MIL-HDBK-217F)

The power supply shall be designed and produced to have a mean time between failure (MTBF) of 100,000 hours at 25 degrees C.

5-0. Environment

5-1 Temperature

a. Operating : 0 to 40 ℃

b. Storage : -20 to 85 ℃

5-2 Humidity

a. Operating : 10 to 90 %

b. Storage: 5 to 90 %

5-3 Altitude

From sea level to 5,000Meter (operation) and 5,000Meter (no operation)

6-0. Safety

6-1. Hi-Pot Test

L、N--> FG：1800Vac, 5mA, 2S

P --> S：4000Vac 5mA 2S

6-2. Insulation Test

500Vdc, 2 Sec. between primary and secondary circuit

IR should ≧ **50 MΩ.**

6-3. Leakage Current

≦ **100 uA**, at 240Vac/50 Hz

6-4. Safety

60601:UL, CUL, TUV, CB 62368: UL, CUL, TUV, CB, UKCA CE, FCC, CCC

6-5. EMS

Items	Specification	Reference
ESD	Contact: ± 8KV	IEC 61000-4-2
	Air: ± 15KV	
RS	Frequency: 80~2700MHz Field Strength: 10V/M, 80% AM(1KHz)	IEC 61000-4-3
EFT	+/-2.0 KV on input AC power ports.	IEC 61000-4-4
SURGE	Line to Line: ± 1KV (peak)	IEC 61000-4-5
	Line to FG: ± 2KV (peak)	IEC 61000-4-5

6-6. EMI

Comply with Standards
EN 55011 Class B FCC PART 15 Class B

7-0. Mechanical Characteristics

7-1. Physical Size : 113 mm (L) * 49 mm (W) * 35.0mm (H)

7-2. Enclosure material : **94V-0** minimum

7-3. Output Cable (Reference) : UL1185 #16

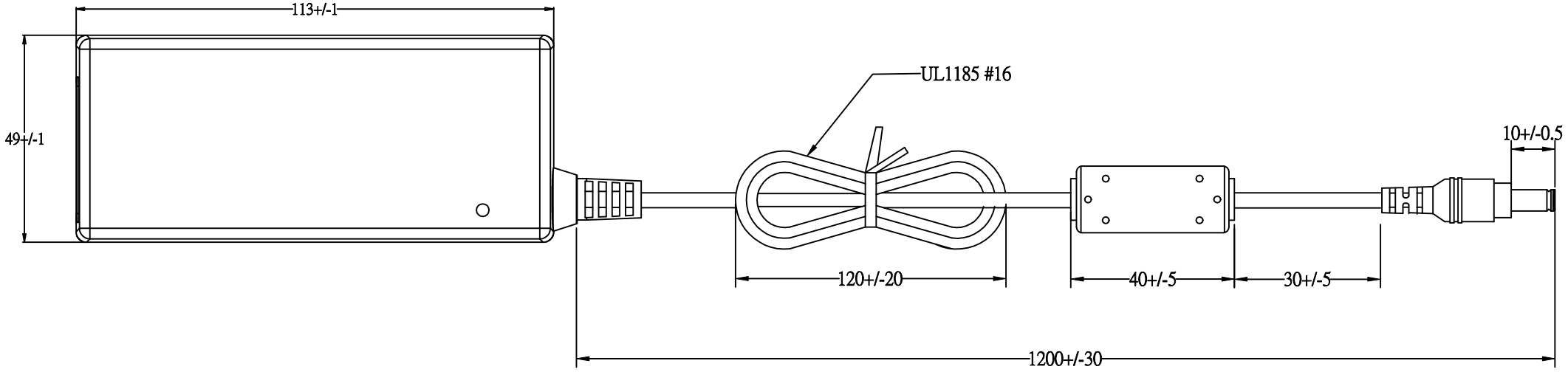
7-4. Vibration Test

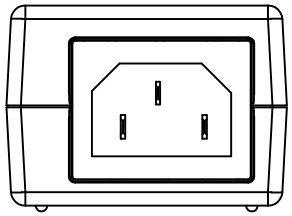
The vibration frequencies are set at 20Hz, with total amplitude of 1.5mm Along the 3 directions namely X-Y-Z. The each direction should be vibrated for 60 minutes, after testing no abnormal electrical or mechanical should occur.

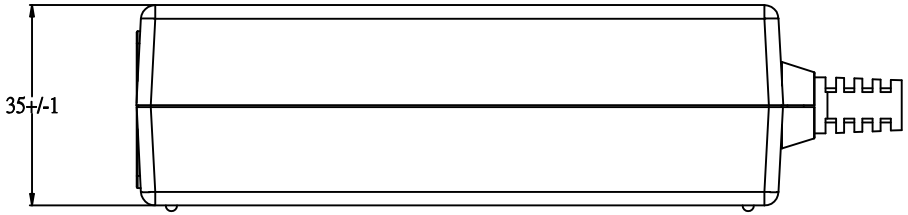
7-5. Drop Test (Referencing to CSA CAN/CSA-C22.2 NO. 60601/ N60601)

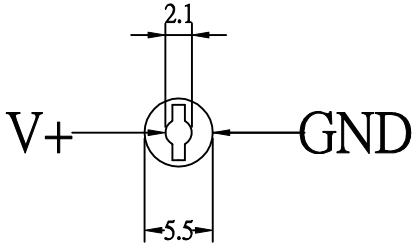
Products shall be dropped from a height of 1000 mm onto a horizontal surface consists of hardwood board at 50+/- 5 mm thick , and lies flat on a concrete floor or a similar rigid base . The sample is dropped three times from each orientation in which it can be placed during normal use. There shall not be damage to the interior or exterior of the tested sample which caused exposure to live parts or increased risk of electric shock , and need meet Hi-Pot specification requirement.

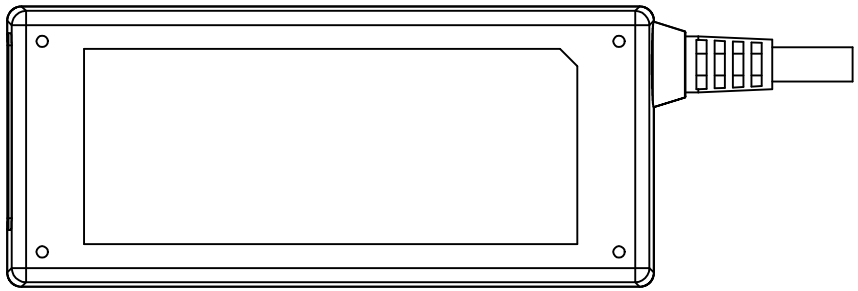
7-6. Net Weight (Reference) : **300 g**





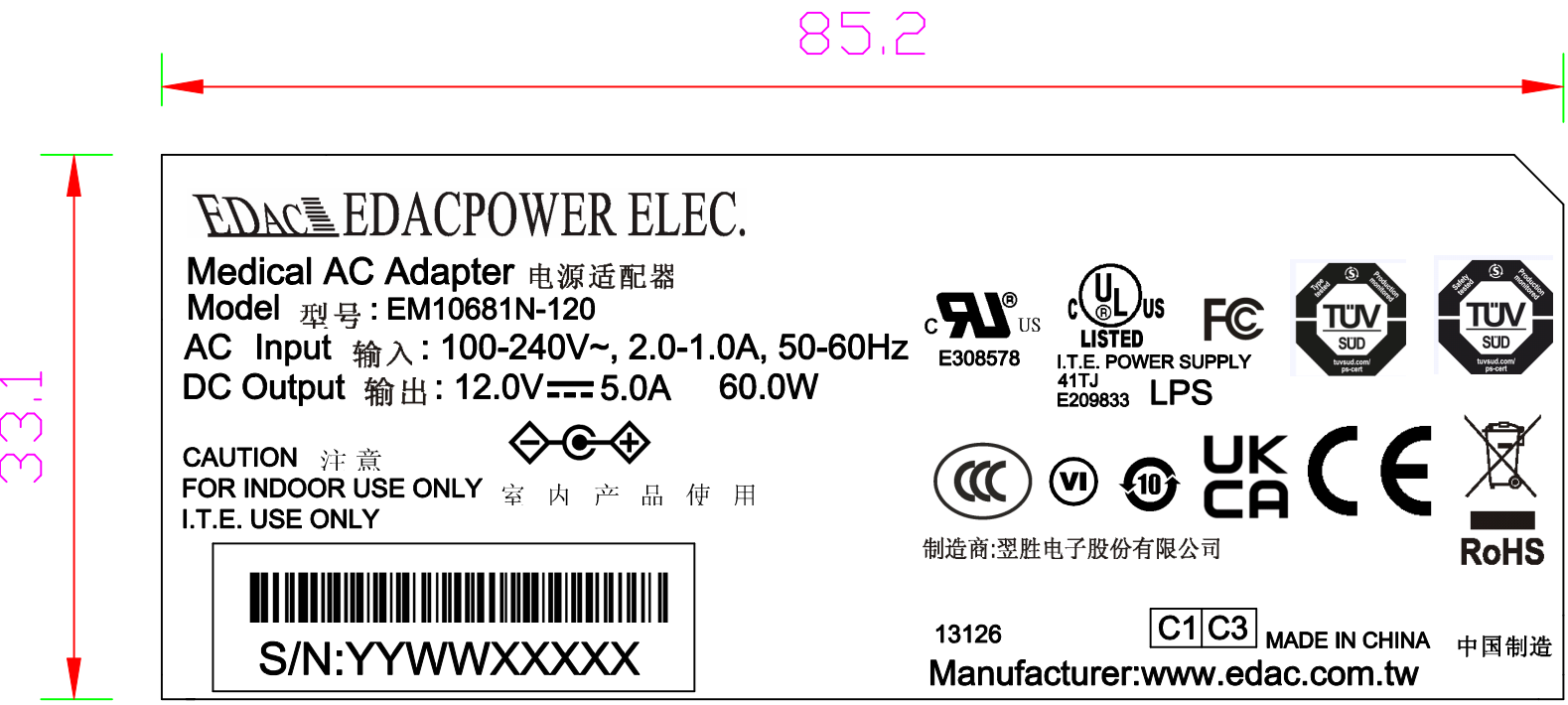






3ZAD12V50R0(Z0524)

EDAC POWER ELEC.				APPROVED
MODEL	EM10681N(36)	UNIT	mm	DESIGNED
color	BLACK	SCALE		CHECK
cus.		DATE	2023-04-29	DRAWING L.J.YU



EDAC P/N.: 3126
Background: Black color
Character: Silver color
Unit: mm

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