

CUSTOMER

JAMES

SPECIFICATION FOR APPROVAL

AC/DC ADAPTOR

CUSTOMER SPEC: INPUT: 100-240V AC 50/60Hz OUTPUT: 12VDC 7500mA

CUSTOMER DWG./PART NO.

PART NO. 2AAL090F

SAMPLE NO: _____ REV.: _____ ISSUE DATE: 2021-8-4

PRDUCT NO: A2100804-01

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
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1 SCOPE

This document describes basic electrical characteristics and mechanical characteristic of 90W class I power adapter.

2 ELECTRICAL SPECIFICATION

2.1 INPUT REQUIREMENT

2.1.1 INPUT VOLTAGE AND FREQUENCY RANGE

	Minimum	Nominal	Maximum	Unit
Input Range	90	100-240	264	Vac, rms
	47	50 & 60	63	Hz

2.1.2 AC INRUSH CURRENT

Test Conditions:

1. Inrush current to be measured with bulk Caps discharged.
2. Ambient Temperature =25°C
3. The AC source to be a minimum 3KVA
4. AC input starting phase angle=90°
5. Vin=Vin(max),Frequency=Fin(min.)
6. Current to be measured using a non-saturating current probe or transformer.

Nominal Output Power	Peak Inrush Current (I-peak)
	≤ 130A

2.1.3 INPUT CURRENT

Input Voltage	Input Current (Iin)
90-264Vac	≤ 1.5A

2.1.4 LEAKAGE CURRENT

Input Voltage	Leakage Current
230Vac/50Hz	≤ 3.5mA

2.1.5 INSULATION RESISTANCE

between primary and secondary	Insulation Resistance
500Vdc	≥ 50MΩ

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2.1.6 LOW POWER CONSUMPTION

Vin	Load	Power consumption
230Vac/50Hz	0A	≤ 0.15 W
115Vac/60Hz		

2.1.7 POWER FACTOR

Vin	Load	Power factor
230Vac/50Hz	7.5A	> 0.9 W
115Vac/60Hz		

2.1.8 HI-POT TEST

Primary to Secondary	Current
4242Vdc/3000Vac,3Secs	≤ 10mA

2.2 INPUT PROTECTION

2.2.1 INPUT CURRENT PROTECTION

A fuse shall be installed on the input line side near the input connector.

2.3 OUTPUT REQUIREMENT

2.3.1 OUTPUT VOLTAGE AND CURRENT AND OUTPUT POWER

Peak load for AC start up.

Vout(nom)	Voltage Range	Current Range			Watt(Max)
		Minimum Load	Full load	Peak load	
+12.0V	±5%	0A	7.5A	9A	94.5W

2.3.2 RIPPLE AND NOISE

Measurements shall be made with an oscilloscope with minimum of 20MHz bandwidth. Output shall be bypassed at the connector with a 0.1µF ceramic disk capacitor and a 10µF electrolytic capacitor for general testing purpose.

Output Voltage	Ripple & Noise(Vp-p)
+12V	≤ 240mV

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2.3.3 OVER VOLTAGE PROTECTION

Test Conditions:

1. Vin=Vin(nominal)
2. No load.

Over voltage protection	$\leq 180\%$ Vout Max.
-------------------------	------------------------

2.3.4 OVER CURRENT PROTECTION

Test Conditions:

1. Vin=Vin(nominal); Frequency=Fin(nominal)
2. Iout is ramped using a CC mode load form 0A until current fold back..

Over current protection	Min	Max
	120%	200%

2.3.5 OVERSHOOT AND UNDERSHOOT

Overshoot and Undershoot	10% Max.
--------------------------	----------

2.3.6 SHORT CIRCUIT PROTECTION

Test Conditions:

1. Short is defined as a load resistance<0.1ohms.
2. A short circuit load is applied for 10 seconds.

Requirement:

1. At the end of the test cycle, the short is replaced with a load equal to Iout (max.).Output voltage must return to limits defined in section 2.3.1.
2. Output must recover automatically within 3 seconds when short is removed.
3. While the output is shorted, output current must not exceed Iout(max) X4.

2.4 PERFORMANCE REQUIREMENT

2.4.1 EFFICIENCY

Meet: Level 6

Active average efficiency	89.00% min.
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2.4.2 TURN ON DELAY TIME

Test Conditions:

1. CC mode load =100% Iout(max) .
2. Power adapter is connected to load before AC power is applied.

Turn on delay time	3secs max.
Rise time	50ms max.

2.4.3 HOLD-UP TIME

Test Conditions:

1. CC mode load =100% Iout(max) .
2. Vin 115V/60Hz & 230Vac/50Hz.

Hold up time	Vin 115Vac/60Hz	Vin 230Vac/50Hz
	8ms min.	16ms min.

2.4.4 DYNAMIC LOAD (LOAD TRANSIENT)

Test Conditions:

1. CC Load cycling between 100% Iout(max) and 50% Iout(max.).
2. Cycling frequency is 120Hz
3. Load slew rate is 500mA/uS

Dynamic	$\pm 10\%$ (Vout)
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3 ENVIRONMENTAL SPECIFICATION

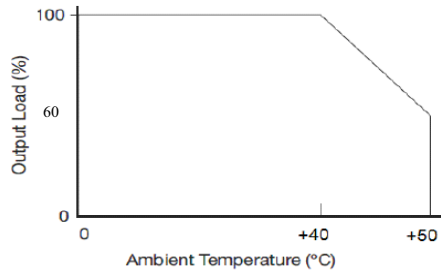
3.1 TEMPERATURE

PARAMETER	OPERATING	NON-OPERATING
Ambient temp	0 to 40°C	-40 to 70°C

***Note: High Temperature Test**

Evaluate the maximum percentage of output load at 50°C and create derating curve.

Derating curve template



Test condition

Ambient Temperature from 40°C to 50°C

Requirement: Find out the maximum percentage of output load at 50°C Required

E-CAP and componets derating are same as the table

Component Type	Component Rated Value
E-Cap Ripple Current	100%
Magnetics (Temperature Only)	100%
Input bulk and XC capacitors, switching MOSFET, Output Rectifier Diode	95%
All Others	90%

3.2 HUMIDITY

PARAMETER	OPERATING	NON-OPERATING
Humidity	5-95% non condensing	0-95% non condensing

3.3 VIBRATION AND SHOCK

PARAMETER	OPERATING	NON-OPERATING
VIBRATION	0.25G RMS, 1Hour	MIL-STD-810D, method 514 and procedure X1
SHOCK	0.5G RMS, 5 repetitions	30G 1/2 sine, 30mS, 6sides

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3.4 ALTITUDE

PARAMETER	OPERATING	NON-OPERATING
Altitude	Sea level to 5000M	Sea level to 12,300M

3.5 CALCULATED MEAN TIME BETWEEN FAILURES (MTBF)

Test Conditions:

1. Operational temperature=25°C
2. Altitude=5000m
3. Confidence level =90%
4. Predictive standard=MIL-HDBK-217F
5. Load current is =0.8*Iout(max)
6. Vin(nom)

MTBF	100,000 hours min.
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3.6 DROP TEST

PARAMETER	OPERATING	NON-OPERATING
Drop test	N/A	IEC-60068-2-32 ED, 100cm UNBOXED

4 APPLICATION STANDARD & RELATED SPECIFICATION

4.1 STANDARD & SAFETY CERTIFICATION

4.1.1 SAFETY STANDARD(MEET)

COUNTRY CODE	STANDARD	TEST REPORTS
NA	UL60950	UL60950
GE	EN60950-1:2006	CB,LVD
JP	J60950	CB,PSE
AU	AS/NZS 60950-1	CB
UK	EN 60950-1:2006	CB,LVD
KO	IEC60950-1:2006	CB
PR	IEC 60950-1:2006	CB,CCC
BZ	IEC 60950-1:2006	CB
NJ	J60950,UL60950	CB,PSE,UL60950

4.1.2 EMI

FCC CFR 47 Part 15, Subpart J, Class B, resistive load.

EN55022/CISPR 22, Class B , resistive load.

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4.1.3 EMS

The Supplier must confirm compliance to the following standards:

EN55024: Immunity

EN61000-3-2: Harmonic Current Emission.

EN61000-3-3: Voltage fluctuations and Flicker.

EN61000-4-2: Electrostatic Discharge, level 4: $\geq 8\text{KV}$, contact $\geq 15\text{KV}$ air discharge.

EN61000-4-3: Radiated Electromagnetic field, 3V/m.

EN61000-4-4: Electrical Fast Transient, $\geq 1\text{KV}$. Criterion B.

EN61000-4-5: Surge $\geq 2\text{KV}$ common mode (Class I only), $\geq 1\text{KV}$ differential mode. Criterion B.

EN61000-4-6: Conducted Immunity, 3A/m

EN61000-4-11: Voltage dips and interruption.

4.1.4 LPS

N/A

4.1.5 ENVIRONMENT STANDARDS

RoHS & REACH regulation

4.1.6 ENERGY SAVING

European CoC – EPS Version 5 Tier2

U.S. DOE – Energy Star VI

5 MECHANICAL

5.1 INPUT CONNECTOR AND OUTPUT CABLE

5.1.1 INPUT CONNECTOR

See mechanical drawing

5.1.2 OUTPUT JACK AND CABLE

See mechanical drawing

5.2 AC ADAPTER EXTERNAL DIMENSION

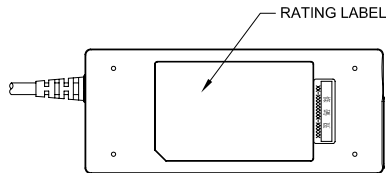
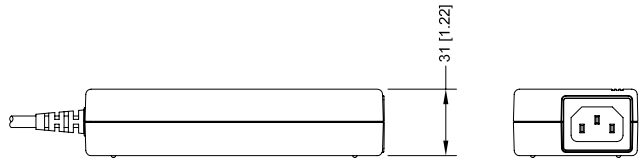
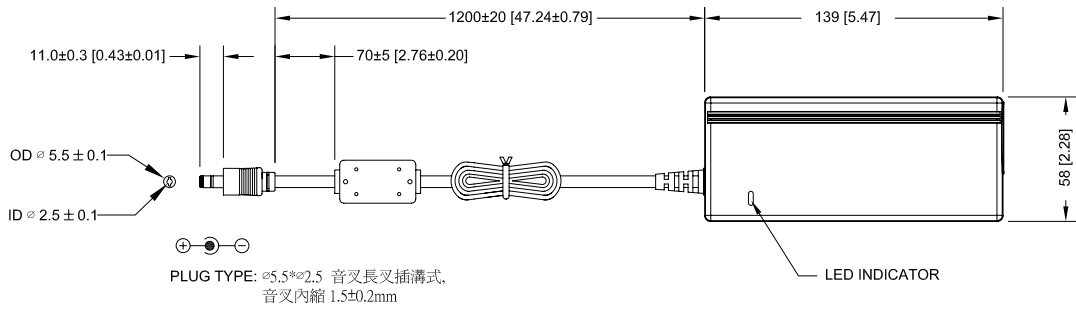
See mechanical drawing

5.3 LABEL DRAWING

See mechanical drawing

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版本	修訂內容	修訂者	日期
D01	新製	Lilac	2014-09-02

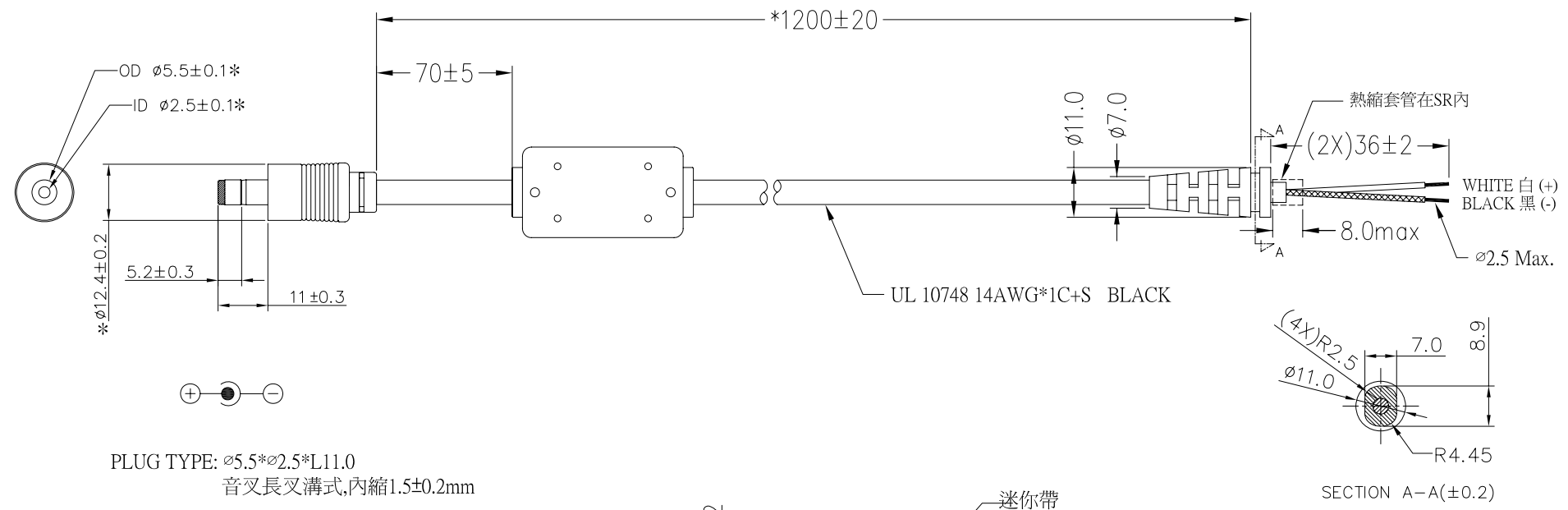


NOTES:

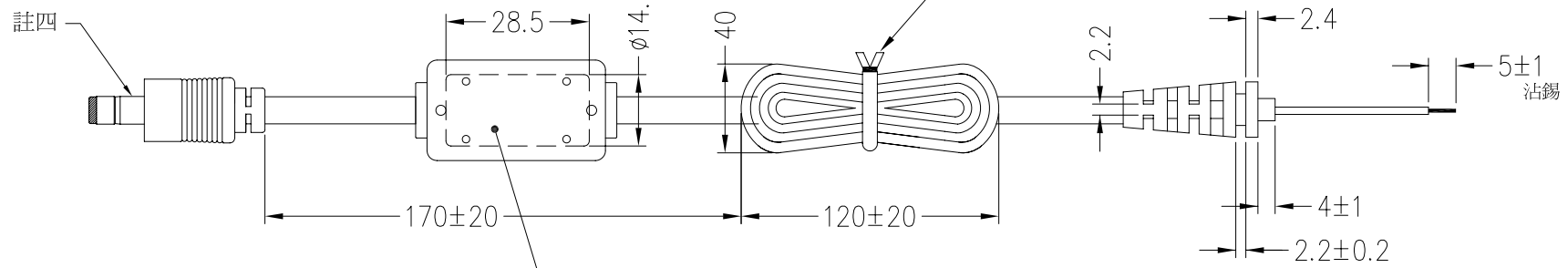
1. CASE & CABLE COLOR : BLACK
2. INLET : IEC320-C14
3. CABLE SPEC. : CABLE ARE UL 10748 14AWG

	<i>Tiger</i>	2014-09-02	AA-L-C14-005	INCHES (MM)	D01
Desktop Switching Adapte 90W (12V)	Leo chen	LILAC	2AAL090F-A14		1/1

A
B
C
D



PLUG TYPE: $\phi 5.5 * \phi 2.5 * L11.0$
音叉長叉溝式, 內縮 1.5 ± 0.2 mm



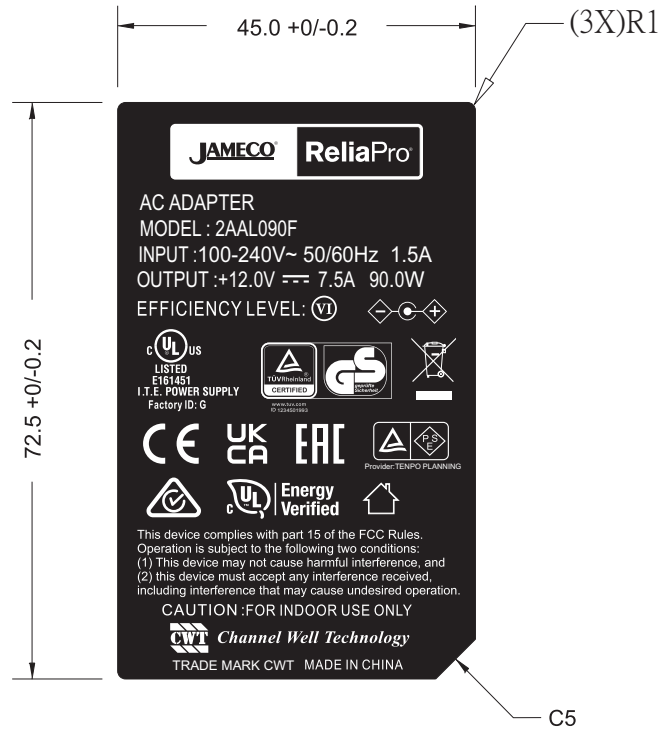
CORE: "KING CORE" RH $\phi 14.2 * \phi 7.0 * L28.5$
OR EQUIVALENT

- 註:
- 一. 電性測試:
 1. 耐電壓: AC 500V/秒, 測試無異常.
 2. 絕緣抵抗: DC 500V 50MΩ以上.
 3. 導通測試: 無斷線、短路、極性反(芯線接內極).
 - 二. 拉力測試: 電線與S/R間吊重 9Kg經過1分鐘
無斷線脫落等異常.
 - 三. 折曲測試:
電線吊重200g, 左右各 60°往復搖擺, 25次/分,
往復2,000 回後, 不完全斷線且外觀無脫落、
斷裂等異常.
 - 四. PLUG 需耐10A, 深圳泰及電子有限公司 NUMBER
SF552250240-01 5.5X2.5X24音叉長叉溝, 或同等級.

環保材料標準:

No	有害物質名稱	含量標準	SHEET METAL TOLERANCE (UNLESS OTHERWISE SPECIFIED)			
			DIMENSION	PIERCING	BENDING	ANGULAR
1	鎘 (Cd)	<75ppm				
2	鉛 (Pb)	<800ppm				
3	汞 (Hg)	<800ppm	$X < 8$	± 0.1	± 0.15	$\pm 0.3^*$
4	六價鉻 (Cr)	<800ppm	$8 \leq X < 25$	± 0.1	± 0.2	$\pm 0.5^*$
5	多溴聯苯 (PBB)	<800ppm	$25 \leq X < 100$	± 0.15	± 0.25	$\pm 0.5^*$
6	多溴二苯醚 (PBDE)	<800ppm	$100 \leq X < 300$	± 0.2	± 0.3	$\pm 1^*$
7	鎳, 鉛, 六價鉻 (包裝材料)	總含量 < 100ppm	$300 \leq X < 800$	± 0.3	± 0.5	$\pm 1.5^*$

D01	新製		
REV.		DESCRIPTION	
	UNIT: mm	MODEL NO.: 2AAL090	
	MATERIAL	PART NO.: G18-B3W112A-M900	
		DRAWING NO.: 10748-14-1200-01-10	
APPROVED	CHECKED	DESIGNED	SCALE: $\frac{1}{1}$
Tiger	Leo Chen	LILAC	SHEET M / 1 OF 1 / A3
DATE: 2014-08-28	DATE: 2014-08-28	DATE: 2014-08-28	THIRD ANGLE PROJECTION



NOTES:

1.MATERIAL:

Base on grid 50# Dumb white PET(網格底50#啞白PET)
 WITH ADHESIVE ON THE BACK.
 THE BACK ADHESIVE MUST CONFORM TO THE UL REQUIREMENT.
 THE LABEL IS NOT ALLOWED TO CURL UPWARDS OR WINKLE
 AL 80°C FOR 2 HOURS.

2.PRINTED:

BLACK BACKGROUND WITH WHITE CHARACTERS.

3.SURFACE TREATMENT(表面處理):DUMB FILM(啞膜/霧P).

Material standard of environmental protection.

No	Hazardous Substances	Content Standards
1	鎘 (Cd)	< 56 ppm
2	鉛 (Pb)	< 700 ppm
3	汞 (Hg)	< 700 ppm
4	六價鉻 (Cr ⁶⁺)	< 700 ppm
5	多溴聯苯 (PBB)	< 700 ppm
6	多溴二苯聯 (PBDE)	< 700 ppm
7	鄰苯二甲酸二(2-乙基) (DEHP)	< 700 ppm
8	鄰苯二甲酸丁二酯(BBP)	< 700 ppm
9	鄰苯二甲酸二丁酯(DBP)	< 700 ppm
10	鄰苯二甲酸二異丁酯(DBP)	< 700 ppm
11	包裝材料(Packaging materials)	總含量 < 100 ppm
12	多環芳烴族化合物(PAHs)	NA

GENERAL TOLERANCE ± (UNLESS OTHERWISE SPECIFIED)				DO1	NEW				
LEVEL	SELECT LEVEL:	ANGULAR TOLERANCE	REVISION	DESCRIPTION					
				UNIT: mm	MODEL NO.: 2AAL090F	MATERIAL	PART NO.: G35-DF	DRAWING NO.:	
DIMENSION	A	B	C	± 0.1	± 0.15	± 0.2	± 0.3*		
	8 ≤ X < 20	± 0.1	± 0.2	± 0.3	± 0.5*				
25 ≤ X < 100	± 0.15	± 0.25	± 0.4	± 0.5*	APPROVED	SAFETY	CHECKED	DESIGNED	
100 ≤ X < 300	± 0.2	± 0.3	± 0.5	± 1°	gun,li	ken.hu	gun,li	Nickole	SCALE:
300 ≤ X < 800	± 0.3	± 0.5	± 0.8	± 1.5°	DATE:Aug.03.2023	DATE:Aug.03.2023	DATE:Aug.03.2023	DATE:Aug.03.2023	THIRD ANGLE PROJECTION

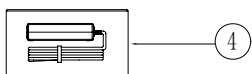
1 2 3 4 5 6

A

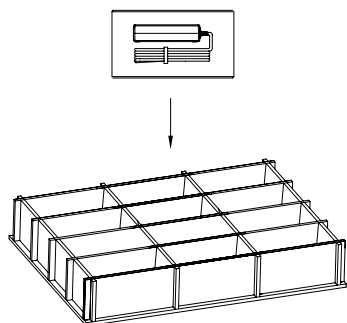
STEP1:將成品及線材整理如下圖



STEP2:將成品放入PE袋內 如下圖

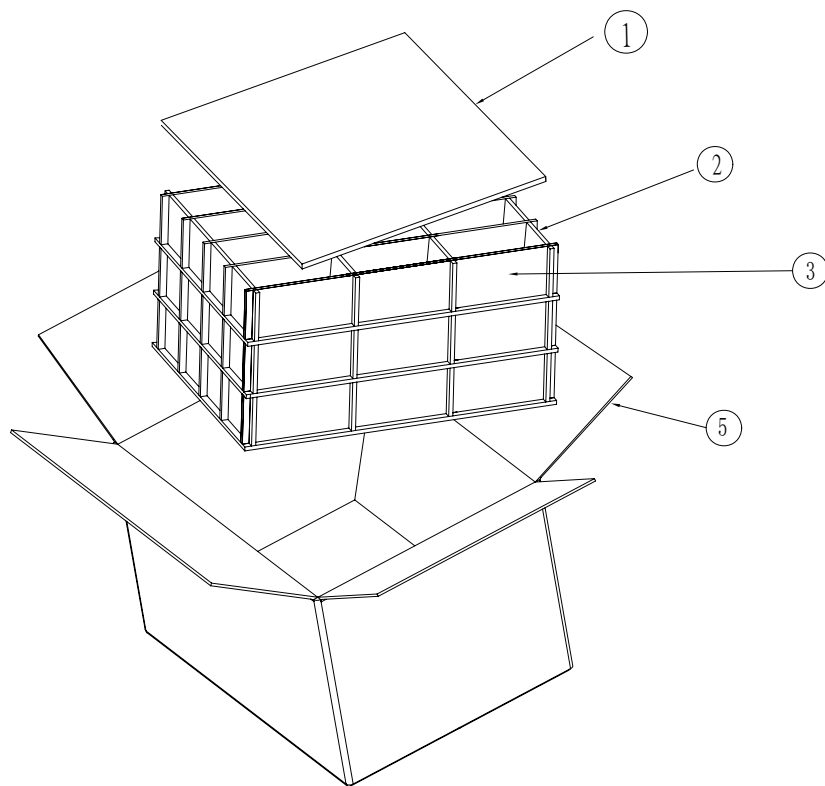


STEP3:將成品如圖般放入格板內 如下圖



B

C



- 1.組件:
 1.1.:天地板:538*353mm
 用量:4PCS
 1.2.:五刀卡:353*75mm,
 用量:12PCS
 1.3.:四刀卡:538*75mm,
 用量:15PCS
 1.4.:PE袋:260*150mm,
 用量:36PCS
 1.5外箱:
 用量:1PCS
 外箱尺寸 550*365*280mm
 QTY.: 36 PCS

D

環保材料標準:

No	有害物質名稱	含量標準	SHEET METAL TOLERANCE (UNLESS OTHERWISE SPECIFIED)				A			DESCRIPTION
			DIMENSION	PIERCING	BENDING	ANGULAR	REV.	UNIT: mm	MODEL NO.: 2AAL090F	
1	鎘 (Cd)	<75ppm	X < 8	±0.1	±0.15	±0.3°		MATERIAL	PART NO.: 550-365-280-002	
2	鉛 (Pb)	<800ppm	8 ≤ X < 25	±0.1	±0.2	±0.5°		*****	DRAWING NO.:	
3	汞 (Hg)	<800ppm	25 ≤ X < 100	±0.15	±0.25	±0.5°		APPROVED	DESIGNED	G99-AAL090F-N027
4	六價鉻 (Cr ⁶⁺)	<800ppm	100 ≤ X < 300	±0.2	±0.3	±1°		YM.XIE	JC.ZOU	Q.LIU
5	多溴聯苯 (PBB)	<800ppm	300 ≤ X < 800	±0.3	±0.5	±1.5°		DATE: 15-05-08	DATE: 15-05-08	DATE: 15-05-08
6	多溴二苯醚 (PBDE)	<800ppm								SCALE:
7	鎘,鉛,汞,六價鉻(包裝材料)	總含量<100ppm								THIRD ANGLE PROJECTION

SHEET 1 OF 1 M/A4L