



MODEL NO : KPS150012-VI 12.0V/12.50A (standard)
ENGINEERING SPECIFICATION SHEET

Purpose: This specification document represents the design criteria of the product identified herein, for the approval of the designated recipient (customer). Prior to production and delivery of this product by CWT, the customer shall endorse its approval of this specification document, upon review of the detailed information provided herein. The customer's endorsement (approval) verifies that the product description is determined to be fully compliant to the customer's design requirements. If one or more samples are included with this specification, the customer's endorsement (approval) further verifies that the product has been tested by the customer, for which the product satisfactorily meets all aesthetic, mechanical, electrical, and operating requirements for its intended usage with the customer's suitable indoor equipment or applications.

To Approve: An authorized employee or agent of the customer shall endorse approval of this specification. Please sign & date this cover-page, and initial each subsequent page in the lower left corner to signify all sections have been read and found to be acceptable. A completed, original copy (signed, dated, initialed) of this specification must be returned to CWT to record the approved customer design. The customer shall keep one or more copies for its records. Upon receipt, CWT shall manufacture the product to the approved customer design. If design revisions are otherwise required, a revised specification and/or modified samples shall be provided by CWT for the endorsement (approval) by the customer.

Channel Well Technology (CWT)
CWT Korea

VERSION: UPDATED	KPS150012 - VI 12V/12.5A
Specification No.: 20210923	5.5x2.5x11(S.H)*1,200



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1 SCOPE

This document describes basic electrical characteristics and mechanical characteristic of **150W** medical power supply adapters.

2 ELECTRICAL SPECIFICATION

2.1 INPUT REQUIREMENT

2.1.1 INPUT VOLTAGE RANGE

Industrial power supply shall operate within input specification from 90Vac to 264Vac or provide automatic switching between high line and low line input ranges. The table below shows common input voltage range.

Input Range	Minimum	Nominal	Maximum	Unit
	90 V	100V-240V	264V	Vac Rms

Table 1 - Input Voltage Range

2.1.2 INPUT FREQUENCY RANGE

The industrial power supply shall operate within specification from 47 to 63 Hz.

2.1.3 AC INRUSH CURRENT

Peak inrush current should not exceed **140A** at 240Vac, 50Hz, 25 degrees C, cold start. It should not interrupt line fuse or cause damage to the industrial power supply either at cold or warm start.

Peak inrush current should not exceed **80A** at 100Vac, 60Hz, 25 degrees C, cold start. It should not interrupt line fuse or cause damage to the industrial power supply either at cold or warm start.

The inrush current must be limited to the extent that no damage is done to the supply under any specified line, load, and temperature conditions. The inrush current shall not cause any external protection devices (i.e. fuses) to trip.

2.1.4 INPUT CURRENT

Maximum steady state input current shall not exceed **2.0A** for any line voltage specified in 2.1.1.

2.1.5 LEAKAGE CURRENT

3.5mA maximum at 240Vac 50Hz

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2.1.6 POWER FACTOR

0.90 Min at 100Vac/60HZ or 240Vac/50HZ full load

2.1.7 INSULATION RESISTANCE

Between primary and secondary	Insulation Resistance
500Vdc	$\geq 50M\Omega$

Table 2 – Insulation resistance

2.2 INPUT PROTECTION

2.2.1 INPUT CURRENT PROTECTION

A fuse with rating of [8.0A / 250V](#) (Time Lag type) shall be installed on the input L line.

A fuse with rating of [3.15A / 250V](#) (Time Lag type) shall be installed on the input N line.

2.3 OUTPUT REQUIREMENT

2.3.1 OUTPUT POWER

The total output power, under steady state conditions, shall not exceed [150W](#).

2.3.2 OUTPUT VOLTAGE AND CURRENT

Under any combination of line and load variation and environmental conditions, all outputs shall remain within tolerance as defined in Table 3. Output voltage(s) shall be measured at the load side of output connector.

Output Voltage	Voltage Range		Current Range		
	Lower Limit	Upper Limit	Minimum Load	Full rated load	PK Load
+12.0V	11.40V	12.60V	0.0A	12.50A	--

Table 3 - Output Voltage and Current

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2.3.3 RIPPLE AND NOISE

Measurements shall be made with an oscilloscope with minimum of 20MHz bandwidth and 1:1 scope Probe, Output shall be bypassed at the connector with a 0.1 μ F ceramic disk capacitor and a 47 μ F electrolytic capacitor for general testing purpose.

Output Voltage	Maximum Ripple & Noise (Vp-p)
+12.0V	240mV

Table 4 – Ripple and Noise

2.3.4 OVER VOLTAGE PROTECTION

The power supply shall provide with over voltage protection such that under any single component failure.

The overvoltage protection test load is 10%~100%, maximum value is 18.5V

2.3.5 OVER CURRENT PROTECTION

The power supply shall be protected when operating any output in overload condition. The power supply shall be shut down and no any damage when the over current condition occurs on the output, bandit will be auto-recovered when the failure is removed.

Output Voltage	Over current protection		Test condition
	Lower Limit	Upper Limit	
+12.0V	15.0A	22.50A	Input voltage:100Vac 60Hz or 240Vac 50Hz.

Table 5 –Over current protection

2.3.6 OVERSHOOT

During turn on or turn off, the output overshoot shall not exceed nominal output voltage by more than 5%, and output shall not change its polarity with respect to its return line.

2.3.7 SHORT CIRCUIT PROTECTION

Power supply shall have self-limiting protection to protect against short circuit or overload conditions. No damage to the power supply shall result from a continuous or intermittent short circuit condition. It will be auto-recovered when the failure is removed.

2.3.8 LINE&LOAD REGULATION

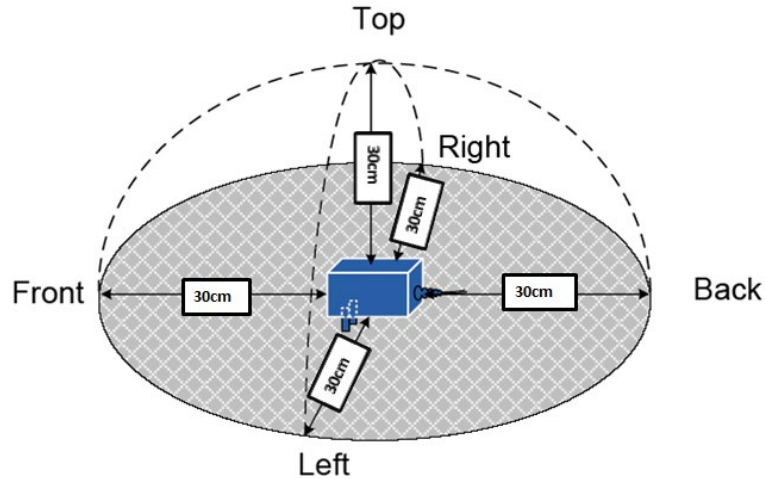
Power supply output voltage line regulation max 2%.

Power supply output voltage load regulation max 5%.

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2.4 ACOUSTIC NOISE

The acoustic noise generated by the adapter, measured from a distance of 30cm from the adapter will not exceed 30 dBA; 100Hz to 20KHz. Test will be performed with I out ramping linearly from 0 to I out (nominal) at a rate not to exceed 0.2A/minute at the maximum and minimum input voltage and frequency. The measurement must be repeated at 360 degree with 5 points around adapter shown below.



2.5 PERFORMANCE REQUIREMENT

2.5.1 EFFICIENCY

The adapter tested is compliant with the following applied standards/regulations: (Level VI)

US DoE: Office of Energy Efficiency and Renewable Energy 10 CFR Parts 429 and 430

AC INPUT 115V/60Hz	4 point average (25%+50%+75%+100% load /4)	89% min.
	No load consumption	≤ 0.15W

EU: Directive for Energy-related Products ErP 2009/125/EC and Implementing Measure (IM) no.

EC278/2009 for External Power Supply

AC INPUT 230V/50Hz	4 point average (25%+50%+75%+100% load /4)	89% min.
	No load consumption	≤ 0.15W
	For CoC 10% load efficiency	79% min.

Table 6 – Efficiency

Note: when testing efficiency, adapter needs to electrify to perform after full load 30 minutes

Input voltage 115Vac 60Hz or 230Vac 50Hz

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2.5.2 TURN ON DELAY TIME

Output shall reach steady state within 3 seconds of turn on at 100Vac or greater.

Output shall reach steady state within 2 seconds of turn on at 240Vac or greater.

2.5.3 HOLD-UP TIME

Hold-up time shall be a minimum of 10mS at 100Vac / 60Hz input.

2.5.4 DYNAMIC LOAD

Power supply output voltage tolerance shall be complied with ± 10%.

Step load change: from 50% to 100% Load on the output.

Dwell Time: 100Hz & 1 KHz 50% duty.

Slew rate: 0.5A/uses

3 ENVIRONMENTAL SPECIFICATION

3.1 CASE TEMPERATURE

Test condition:

1. Measured at 25°C ambient, sea level.
2. Over entire operating range for input voltage and frequency.
3. Any orientation.
4. Air flow is natural convection.

Requirement: (Follow IEC/EN/UL 62368 regulation)

1. At any point on the case surface, temperature should not exceed 77°C.
2. At any point of the case surface, temperature should not exceed 87°C under abnormal operating conditions.

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3.2 HUMIDITY/VIBRATION/ALTITUDE/DROP TEST

PARAMETER	OPERATING	NON-OPERATING
VIBRATION	N/A	Frequency 5~100Hz / Amplitude 2.5mm. perform vibration of X,Y,Z three axes, each vibration test for 1 Hour
Ambient temp	<u>-10 to 40°C</u>	-20 to 80°C(Notes 1)
Altitude	<u>Sea level to 16,404 feet(5000m)</u>	Sea level to 5,000 feet(1524m)
Humidity	10-90% non-condensing	5-95% non-condensing (Notes 1)
Drop test	N/A	Follow safety 100cm(Notes 2)

Table 7 – Humidity/vibration/altitude/drop

Notes:

- (1) The product will meet these requirements unpackaged and in the adapter shipping container.
- (2) The adapter drop from 100cm height on a hard wooden surface.

No hazard as result after drop test for enclosure material.

3.3 E-CAP LIFE

Only Caps with rated temperature of $\geq 105^{\circ}\text{C}$ will be used in the adapter.

The formula used to calculate Cap life is shown below. Because ripple current is not included in the calculation, measured ripple current must be at or below capacitor manufacturer's rating.

All temperatures in degrees C, For Electrolytic Cap:

$$L = L_0 * 2^{((T_0 - T_a)/10)}$$

T_0 = Manufacturer's published rated maximum temperature.

T_a = Measured capacitor case temperature.

L_0 = Manufacturer's published E-Cap life (2000 hour, 3000 hour, 5000 hour, 7000hour, 10000 hour, etc.)

Test Conditions:

AC INPUT	Altitude	Ambient Temperature	Output Current	Life
115Vac(60Hz)& 230Vac(50Hz)	Sea level	25°C	$I_{out}(\text{nominal}) * 0.8$	2 years (min.)

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Table 8 – E-cap life

3.4 CALCULATED MEAN TIME BETWEEN FAILURES (MTBF)

Test Conditions:

1. Operational temperature=25°C
2. Confidence level =90%
3. Predictive standard=Telcordia SR-332, issue 2.
4. Load current is = full load
5. Vin 115Vac(60Hz) and 230Vac(50Hz)
6. **MTBF: 100000 hours min.**

3.5 BURN-IN

Burn-in test:

Test condition: 110Vac / 220Vac 50Hz, with 100% maximum load at 40°C ambient temperature.

Test method:

Burn-in 110 minutes; and 30 seconds "ON", 30 seconds "OFF" within 5 minutes, then 5 minutes "ON"

Test criteria:

During this conditioning the power supply output normal and no damage or hazardous condition will occur.

ORT and life test:

Input condition:

110Vac / 220Vac 50Hz, "ON/OFF" 10 times within 5 minutes, 45 minutes "ON" 45 minutes "OFF"

Test condition:

Cycle by cycle test 168 hours with 100% maximum load at 40°C ambient temperature

Test criteria:

During this conditioning the power supply output normal and no damage or hazardous condition will occur.

4 RELATED SPECIFICATION

4.1.1 EMI

EN55032/CISPR 32, Class B, resistive load

	QP and Average (Conducted)	QP (Radiated)
For Mass Production	Minimum 3dB margin	Minimum 3dB margin

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EN61000-3-2: Harmonic Current Emission.
EN61000-3-3: Voltage fluctuations and Flicker.

4.1.2 SAFETY STANDARD

Follow safety compliance as below which base on customer apply to certification:

COUNTRY	STANDARD	TEST REPORT
UNITED STATES	UL60950/UL62368 ; CAN/CSA C22.2 No. 60950 / CAN/CSA C22.2 No. 62368	UL/cUL
JAPAN	J60950/J62368	PSE
EUROPE	EN60950 / EN62368	CB/LVD
AUSTRALIA	AS/NZS 60950/AS/NZS 62368	CB/RCM
UNITED KINGDOM	EN60950 / BS EN62368 / EN62368	CE
CHINA	GB4943.1, GB9254, GB17625.1	CB, CCC
KOREA	K62368	CB/KC
BRAZIL	IEC60950	CB
INDIA	IS 13252 / IEC60950	BIS
TAIWAN	CNS14336-1, CNS13438, CNS15663(ROHS)	BSMI
SINGAPORE	IEC60950 / IEC62368	CB/PSB
ARGENTINA	IEC62368 / IRAM 2063	CB/S MARK
MEXICO	NOM-001-SCFI-1993 / NOM-029-ENER-2017	NOM

4.1.3 DIELECTRIC STRENGTH—(HI-POT)

Primary to secondary: **3000VAC**.

Primary to FG: **1800VAC**. (Suitable for C14, C6 AC connector).

Test time: **60** second

Cut-off current: **10mA** max

Arcing current: **10mA** max

4.1.4 GROUNDING

Adapter AC Input connector is C14 and C6, FG pin to DC plug FG **0.1 ohm** max at **40A/120second**.

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4.1.5 EMS

The adapter must confirm compliance to the following immunity standards: EN55035

EN61000-4-2: Electrostatic Discharge, Criterion B.

±6KV contact.

±8KV air discharge.

EN61000-4-3: Radio-frequency, Continuous radiated disturbance, Criterion B.

3V/m.

EN61000-4-4: Electrical Fast Transient, Criterion B.

±1KV differential.

±2KV common mode.

EN61000-4-5: Surge, Criterion B.

±1KV differential mode.

±2KV common mode.

EN61000-4-6: Radio-frequency, Continuous conducted disturbance, Criterion B.

3Vrms.

EN61000-4-8: Power Frequency Magnetic Field Immunity (PFMF), Criterion B.

1A/m.

EN61000-4-11: Voltage dips and interruption.

0%UT; 0.5P, Criterion: B.

70%UT; 25P/30P, Criterion: C.

0%UT; 250P/300P, Criterion: C.

4.1.6 ENVIRONMENT STANDARD

RoHS & REACH regulation

5 **MECHANICAL**

5.1 INPUT CONNECTOR AND OUTPUT CABLE

5.1.1 INPUT CONNECTOR

AC Input connector shall be IEC320 C14, or C6 optional

5.1.2 OUTPUT CABLE

Please read the reference to FIG.

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5.2 AC ADAPTER EXTERNAL DIMENSION

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1

2

3

4

5

6

A

B

C

D



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 AT 80 C FOR 2 HOURS.

2. PRINTED:

BLACK BACKGROUND WITH WHITE CHARACTERS.

3. 表面處理：防刮花啞膜

4. 厚度：0.1~0.15mm

Material standard of environmental protection:

No	Hazardous Substances	Content Standards	GENERAL TOLERANCE ± (UNLESS OTHERWISE SPECIFIED)				D01	NEW
			LEVEL	SELECT LEVEL:				
			DIMENSION	A	B	C		
1	鎘 (Cd)	< 56 ppm						
2	鉛 (Pb)	< 700 ppm						
3	汞 (Hg)	< 700 ppm						
4	六價鉻 (Cr ⁶⁺)	< 700 ppm						
5	多環聯苯 (PBB)	< 700 ppm	X < 8	± 0.1	± 0.15	± 0.2	± 0.3°	
6	多環聯苯 (PBDE)	< 700 ppm						
7	鄰苯二甲酸二(DEHP)	< 700 ppm	8 ≤ X < 20	± 0.1	± 0.2	± 0.3	± 0.5°	
8	鄰苯二甲酸二丁酯(DBP)	< 700 ppm	25 ≤ X < 100	± 0.15	± 0.25	± 0.4	± 0.5°	
9	鄰苯二甲酸二異丁酯(DIBP)	< 700 ppm	100 ≤ X < 300	± 0.2	± 0.3	± 0.5	± 1°	
10	鄰苯二甲酸二異丁酯(DIBP)	< 700 ppm	300 ≤ X < 800	± 0.3	± 0.5	± 0.8	± 1.5°	
11	包裝材料(Packaging materials)	總含量 < 100 ppm						
12	多環芳烴化合物(PAHs)	NA						

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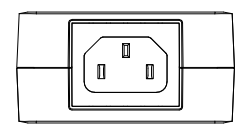
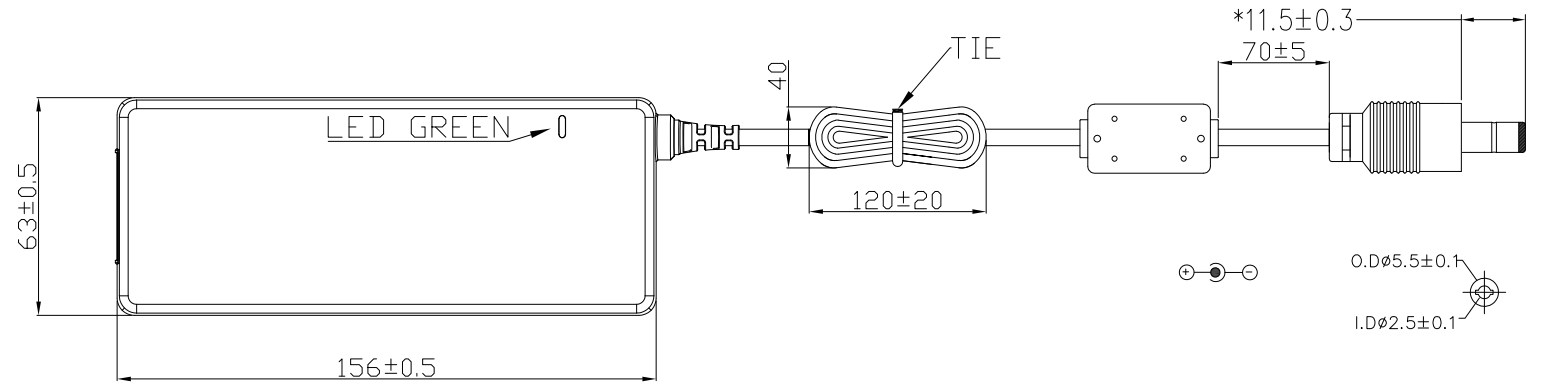
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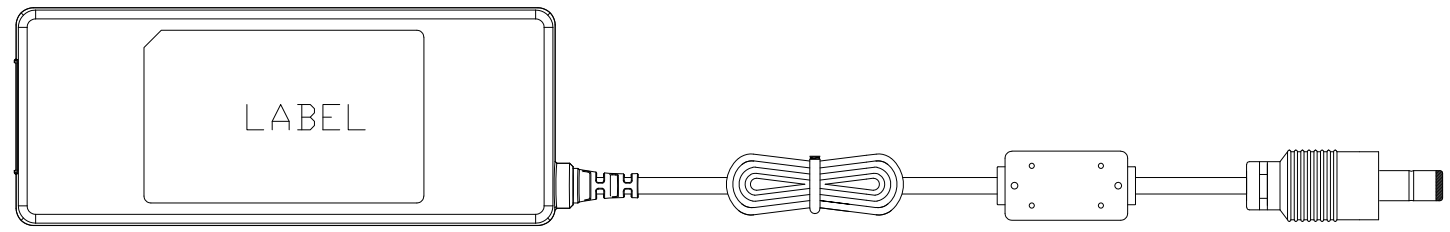
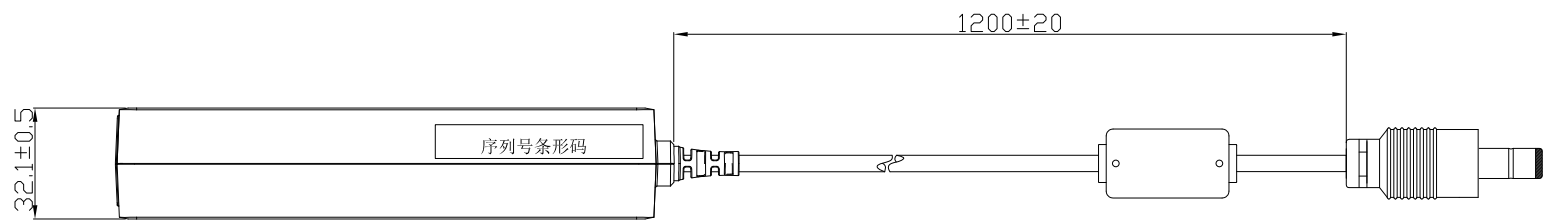
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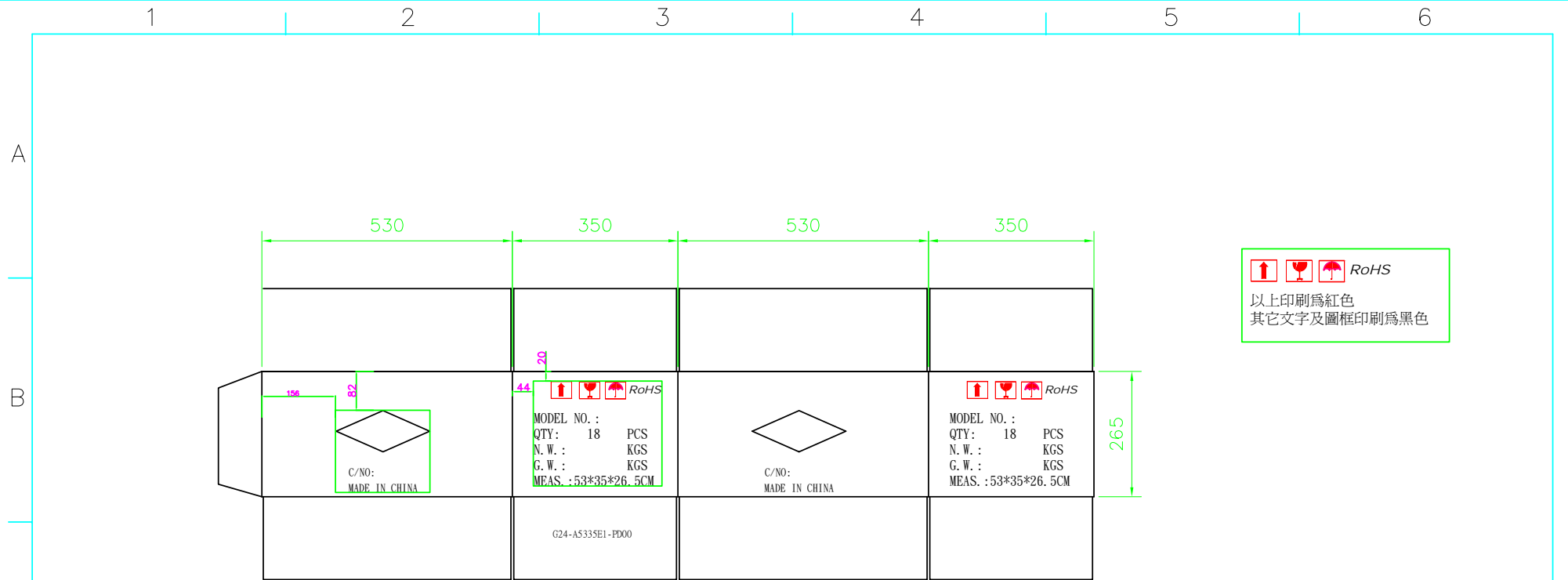
**AC INLET:
IEC-60320 C14**



環保材料標準:

No	有害物質名稱	含量標準	GENERAL TOLERANCE ± (UNLESS OTHERWISE SPECIFIED)				ANGULAR TOLERANCE
			LEVEL	SELECT LEVEL : x			
			DIMENSION				
1	鎘 (Cd)	<75ppm	X < 8	±0.1	±0.15	±0.2	±0.3°
2	鉛 (Pb)	<800ppm	8 ≤ X < 25	±0.1	±0.2	±0.3	±0.5°
3	汞 (Hg)	<800ppm	25 ≤ X < 100	±0.15	±0.25	±0.4	±0.5°
4	六價鉻 (Cr ⁶⁺)	<800ppm	100 ≤ X < 300	±0.2	±0.3	±0.5	±1°
5	多溴聯苯 (PBB)	<800ppm	300 ≤ X < 800	±0.3	±0.5	±0.8	±1.5°
6	多溴二苯醚 (PBDE)	<800ppm	總含量<100ppm				
7	鎘,鉛,汞,六價鉻,(包裝材料)	總含量<100ppm					

0.1	2023.07.06	GDF	新制定	
REV.	DATE	APPROVED	DESCRIPTION	
		UNIT: mm	MODEL NO.: KPS150012-VI	
		MATERIAL	PART NO: G99-KPS120F-L025	
APPROVED BIN DATE: 2023.07.06		CHECKED YJH	DESIGNED GDF	DRAWING NO.: G18-BCW112A-MB00
		SCALE: 1: 1	SHEET 1 OF 1	M/XX
DATE: 2023.07.06	DATE: 2023.07.06	DATE: 2023.07.06	THIRD ANGLE PROJECTION	



綠色方框與字體無需印刷

NOTES:

1. 材質：五層瓦楞紙A/A(B+C楞)，破裂強度11.0KGS(MIN); 抗壓強度310KGS(MIN); 邊壓強度4.5KN/M(MIN)，最大堆疊層數7層。
2. 厚度：6±0.5mm。
3. 搭配誤差：與格板之間間隙要大於2mm，小於6mm。
4. 警告標誌及ROHS印刷顏色：紅色(PANTONE 1788C)，其它字體印刷黑色。
5. 虛線為預折壓痕。
6. 請依圖面標示尺寸制作。
7. 公差：其它未標注公差
- ★ 圖形及字體公差：10mm以下為+/-1mm，11~50mm為+/-3mm，51mm以上為+/-5mm，特殊情況除外。
- ★ 偏移公差：10mm以下為+/-2mm，11~50mm為+/-3mm，51mm以上為+/-5mm，特殊情況除外。
8. 結合方式（一體成形）：打釘。
外箱最少要打三排釘；外箱尺寸較高時，打釘數要保證兩釘之間的距離要小於100mm，且間距保持基本均勻(公差+10/-10mm)
9. 所有材料需符合RoHS環保要求。
10. 每箱裝 18 PCS。

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	±0.3°
4	鉻 (Cr)	<800ppm	8 ≤ X < 25	±0.1	±0.2	±0.5°
5	多環聯苯 (PBB)	<800ppm	25 ≤ X < 100	±0.15	±0.25	±0.5°
6	多環二苯噁 (PBDE)	<800ppm	100 ≤ X < 300	±0.2	±0.3	±1°
7	銅、鉛、汞、六價鉻 (銅、鉛、汞、六價鉻)	<100ppm	300 < X < 800	±0.3	±0.5	±1.5°

0.2	外箱印字 MODEL NO. 取消機種名. 2013-09-30_Jeimy		
0.1			
REV.	DESCRIPTION		
	UNIT: mm	MODEL NO.: KPS150012-VI	
	MATERIAL	PART NO.: G24-A5335E1-PD00	
		DRAWING NO.: 2012CTN008	
		外箱	
APPROVED	CHECKED	DESIGNED	SCALE: 1 : 1 SHEET
Tiger	Chik Heng Wang	JASON	THIRD ANGLE PROJECTION
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