



MODEL NO : KPL-060F-VI 12.0V/5.0A
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 China
CWT Korea

VERSION: UPDATED	KPL - 060F - VI 12V/5A
Specification No.: 20221201	5.5x2.5x11(S)*1,200



Table of Contents

1	SCOPE.....	5
2	ELECTRICAL SPECIFICATION.....	5
2.1	INPUT REQUIREMENT.....	5
2.1.1	<i>Input voltage range.....</i>	5
2.1.2	<i>Input frequency range.....</i>	5
2.1.3	<i>AC inrush current.....</i>	5
2.1.4	<i>Input current.....</i>	5
2.1.5	<i>Leakage current.....</i>	6
2.1.6	<i>Insulation resistance.....</i>	6
2.1.7	<i>Low power consumption.....</i>	6
2.2	INPUT PROTECTION.....	6
2.2.1	<i>Input current protection.....</i>	6
2.3	OUTPUT REQUIREMENT.....	6
2.3.1	<i>Output power.....</i>	6
2.3.2	<i>Output voltage and current.....</i>	6
2.3.3	<i>Ripple and noise.....</i>	7
2.3.4	<i>Over voltage protection.....</i>	7
2.3.5	<i>Over current protection.....</i>	7
2.3.6	<i>Overshoot.....</i>	7
2.3.7	<i>Short circuit Protection.....</i>	7
2.3.8	<i>Audible noise.....</i>	8
2.4	PERFORMANCE REQUIREMENT.....	8
2.4.1	<i>Efficiency.....</i>	8
2.4.2	<i>Turn on delay time.....</i>	8
2.4.3	<i>Hold-up time.....</i>	8
2.4.4	<i>Dynamic load.....</i>	8
3	ENVIRONMENTAL SPECIFICATION.....	8
3.1	TEMPERATURE.....	8
3.2	HUMIDITY.....	9
3.3	VIBRATION AND SHOCK.....	9
3.4	ALTITUDE.....	9

ISSUE DATE: 2019/05/09	Revision No.: 2.0	
Specification No:	Page: 3 of 11	



3.5	CALCULATED MEAN TIME BETWEEN FAILURES (MTBF).....	9
3.6	BURN-IN.....	9
4	RELATED SPECIFICATION.....	10
4.1.1	EMI.....	10
4.1.2	Dielectric strength—(Hi-pot).....	10
4.1.3	Surge.....	10
4.1.4	Electrostatic discharge ESD.....	10
4.1.5	RF Immunity.....	11
4.1.6	Environment standards.....	11
4.1.7	Electrical Fast Transients (EFT).....	11
5	MECHANICAL.....	11
5.1	INPUT CONNECTOR AND OUTPUT CABLE.....	11
5.1.1	Input connector.....	11
5.1.2	Output cable.....	11
5.2	AC ADAPTER EXTERNAL DIMENSION.....	11

ISSUE DATE: 2019/05/09	Revision No.: 2.0	
Specification No:	Page: 4 of 11	



1 SCOPE

This document describes basic electrical characteristics and mechanical characteristic of **60 W** power 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 100 A 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 60 A 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 1.7 A for any line voltage specified in 2.1.1.

ISSUE DATE: 2019/05/09	Revision No.: 2.0	
Specification No:	Page: 5 of 11	



2.1.5 LEAKAGE CURRENT

0.75mA maximum at 240Vac 50Hz

2.1.6 INSULATION RESISTANCE

Insulation resistance shall be more than 50M ohm between primary and secondary.

2.1.7 LOW POWER CONSUMPTION

Vin	Load	Power consumption
240Vac/50Hz 100Vac/60Hz	0A	≤ 0.15 W

2.2 INPUT PROTECTION

2.2.1 INPUT CURRENT PROTECTION

A fuse with rating of 3.15 A / 250 V (Time Lag type) shall be installed on the input line side near the input connector and no any electrical components before.

2.3 OUTPUT REQUIREMENT

2.3.1 OUTPUT POWER

The total output power, under steady state conditions, shall not exceed 60 W.

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 2. 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	5.0A	--

Table 2 - Output Voltage and Current

ISSUE DATE: 2019/05/09	Revision No.: 2.0	
Specification No:	Page: 6 of 11	



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 3 – 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 power supply provides output over voltage protected in latch off by zener diode, and no damage to customer device.

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, and It will be auto-recovered when the failure is removed.

Output Voltage	Over current protection		Test condition
	Lower Limit	Upper Limit	
+12.0V	5.80A	9.00A	Input voltage:100Vac 60Hz or 240Vac 50Hz.

Table 4 –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 POTECTION

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.

ISSUE DATE: 2019/05/09	Revision No.: 2.0	
Specification No:	Page: 7 of 11	



2.3.8 AUDIBLE NOISE

There is no audible noise canned been heard when it work with rated spec.

2.4 PERFORMANCE REQUIREMENT

2.4.1 EFFICIENCY

Active average mode Efficiency (watt out / watt in) shall be a minimum of 89 % at 230vac/50Hz.

Active average mode Efficiency (watt out / watt in) shall be a minimum of 88 % at 115vac/60Hz.

Complies to EPA DOE standard specification and EU CEC standard specification (Level VI).

calculate the model is single average active mode efficiency for each test voltage by testing at 100%,75%,50%,and 25% of rated current output and then computing the simple arithmetic average of these four values respectively at 115V/60HZ and 230V/50HZ test result for reference.

Efficiency (watt out / watt in) shall be a minimum of 79 % at 10% full load.

Note: when testing efficiency, adapter needs to electrify to perform after full load 60 minutes

Input voltage 115Vac 60Hz or 230Vac 50Hz

2.4.2 TURN ON DELAY TIME

Output shall reach steady state within 5 seconds of turn on at 100Vac or greater.

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

2.4.3 HOLD-UP TIME

Hold-up time shall be a minimum of 8 mS at 100Vac / 60Hz input.

2.4.4 DYNAMIC LOAD

Power supply output voltage tolerance shall be complied with $\pm 5\%$.

Step load change: from 50% to100% Load on the output.

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

Slew rate: 0.5A/uses

3 ENVIRONMENTAL SPECIFICATION

3.1 TEMPERATURE

Operation within specification: -10 to 45 degrees C.

Storage: -20 to 85 degrees C

ISSUE DATE: 2019/05/09	Revision No.: 2.0	
Specification No:	Page: 8 of 11	



3.2 HUMIDITY

Operation: 10% to 90% relative humidity, non-condensation.

Storage: 5% to 95% relative humidity, including condensation.

3.3 VIBRATION AND SHOCK

The power supply shall be designed to withstand normal transportation vibration per MIL-STD-810F, method 514 and procedures X, as it is mounted in the chassis assembly and packed for shipping.

3.4 ALTITUDE

The power supply shall operate properly at any altitude between 0 ~ 16,404 feet (5000 meter) above sea level, and withstand storage at 50,000 feet.

3.5 CALCULATED MEAN TIME BETWEEN FAILURES (MTBF)

The MTBF for the power adapter shall equal or exceed **100,000** hours when operated at full rated load in an ambient temperature of 25 degree C.

3.6 BURN-IN

Burn-in test:

Test condition: 110Vac / 220Vac 50Hz, with 100% maximum load at 45 ±5°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 45 ±5°C ambient temperature.

Test criteria: during this conditioning the power supply output normal and no damage or hazardous condition will occur.

ISSUE DATE: 2019/05/09	Revision No.: 2.0	
Specification No:	Page: 9 of 11	



4 RELATED SPECIFICATION

4.1.1 EMI

VCCI:2015-04 Class B

FCC 15(Class-B, 115Vac operation)

CISPR 22 Class-B limits

EN55032:2015(Class-B limits)

EN61000-3-2:2014

EN61000-3-3:2013

EN55024:2010+A1:2015

47 CFR Part 15, Subpart B, Class B limits

GB 9254 ITE Emissions Latest Edition

4.1.2 DIELECTRIC STRENGTH—(HI-POT)

Primary to GND :2500VDC..

Test time: 60 second

Cut-off current: 5mA max

Arcing current: 10mA max

4.1.3 SURGE

It is referring to EN61000-4-5 IEC61000-4-5:2001 Level 4.

Differential mode surge immunity: 2KV

Common-mode Surge Immunity: 4KV

* **Determination level: Criteria A (Product testing and testing before and after any change in function is not).**

4.1.4 ELECTROSTATIC DISCHARGE ESD

It is referring to EN61000-4-2, IEC61000-4-2:2001, IEC801-2 Level 3.

Contact electrostatic discharge: + - 6KV.

Air electrostatic discharge: + - 8KV.

* **Determination level: Criteria A (Product testing and testing before and after any change in function is not).**

ISSUE DATE: 2019/05/09	Revision No.: 2.0	
Specification No:	Page: 10 of 11	



4.1.5 RF IMMUNITY

It is referring to IEC61000-4-3 Class A 3V/m

4.1.6 ENVIRONMENT STANDARDS

RoHS Regulation

The RoHS compliance symbol will be included on the data plate.

4.1.7 ELECTRICAL FAST TRANSIENTS (EFT)

It is referring to IEC61000-4-4 Class B Test Voltage: 2KV

5 MECHANICAL

5.1 INPUT CONNECTOR AND OUTPUT CABLE

5.1.1 INPUT CONNECTOR

AC Input connector shall be IEC320 C14 power connector.

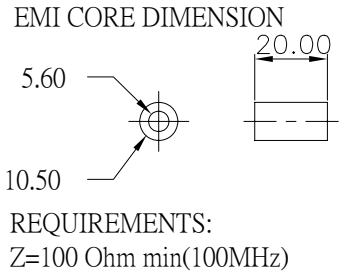
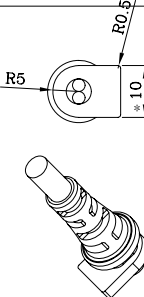
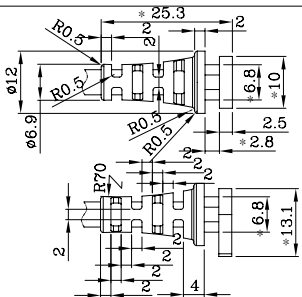
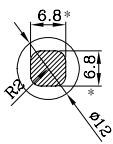
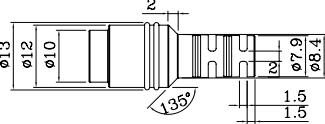
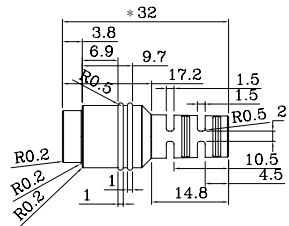
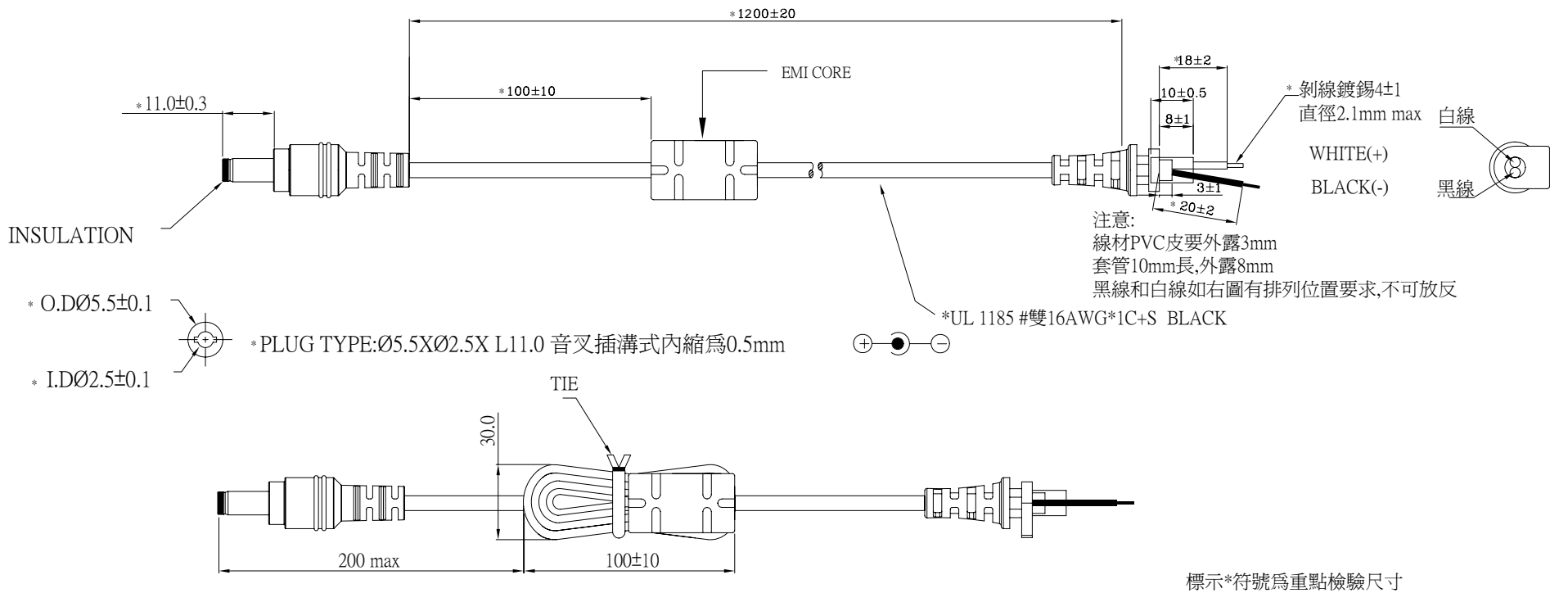
5.1.2 OUTPUT CABLE

The output cable shall be [UL1185#16AWG](#).

5.2 AC ADAPTER EXTERNAL DIMENSION

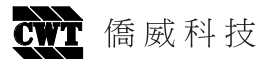
ISSUE DATE: 2019/05/09	Revision No.: 2.0	
Specification No:	Page: 11 of 11	

1	2	3	4	5	6
版本	修訂內容	修訂者	日期		
0.1	新發行	羅李金	20111018		



環保材料標準:

No	有害物質名稱	含量標準	SHEET METAL TOLERANCE (UNLESS OTHERWISE SPECIFIED)			單重: g	0.1	REV.		
1	鎘 (Cd)	<75ppm						DESCRIPTION		
2	鉛 (Pb)	<800ppm	DIMENSION	PIERCING	BENDING	ANGULAR		UNIT: mm		
3	汞 (Hg)	<800ppm	X < 8	±0.1	±0.15	±0.3°		MATERIAL		
4	六價鉻 (Cr) ⁶	<800ppm	8 ≤ X < 25	±0.1	±0.2	±0.5°		PART NO.: G18-B3A215A-MT00		
5	多溴聯苯 (PBB)	<800ppm	25 ≤ X < 100	±0.15	±0.25	±0.5°		DRAWING NO.:		
6	多溴二苯噁 (PBDE)	<800ppm	100 ≤ X < 300	±0.2	±0.3	±1°		APPROVED	CHECKED	DESIGNED
7	鎘,鉛,汞,六價鉻(包裝材料)	總含量<100ppm	300 ≤ X < 800	±0.3	±0.5	±1.5°	DATE: 20111018	DATE: 20111018	DATE: 20111018	SCALE:



APPROVED 葉柏青

CHECKED 韓雲

DESIGNED 羅李金

DATE: 20111018

DATE: 20111018

DATE: 20111018

DESCRIPTION

MODEL NO.: KPL***

PART NO.: G18-B3A215A-MT00

DRAWING NO.:

SCALE:

THIRD ANGLE PROJECTION

SHEET 1 OF 1

M/A4 L

1

2

3

4

5

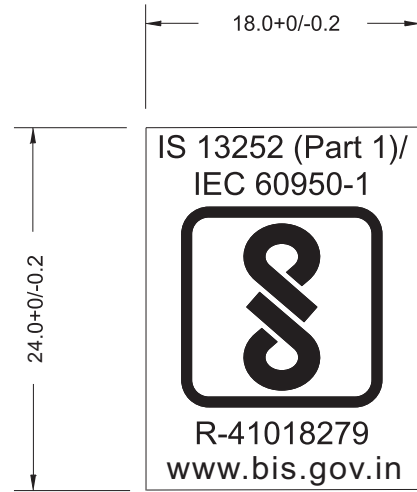
6

A

B

C

D



2:1

備註:

- 1.MATERIAL : 網格底消銀龍 50#,背膠(壓克力膠).(UL 安規)
- 2.表面處理 : +OPP
- 3.COLOR : 銀底,黑字.
- 4.總厚度 : 0.1~0.15mm
- 5.高溫測試 : 需耐溫80度C, 2小時 不可翹皮或皺摺.
- 6.安規標誌請按安規標準來製作.

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)	< 75 ppm				
2	鉛 (Pb)	< 800 ppm				
3	汞 (Hg)	< 800 ppm	X < 8	± 0.1	± 0.15	± 0.3°
4	六價鉻 (Cr ⁶⁺)	< 800 ppm	8 ≤ X < 20	± 0.1	± 0.2	± 0.5°
5	多溴聯苯 (PBB)	< 800 ppm	25 ≤ X < 100	± 0.15	± 0.25	± 0.5°
6	多溴二苯醚 (PBDE)	< 800 ppm	100 ≤ X < 300	± 0.2	± 0.3	± 1°
7	鎘,鉛,汞,六價鉻.(包裝材料)	總含量 < 100 ppm	300 ≤ X < 800	± 0.3	± 0.5	± 1.5°

A03	更新厚度要求.何倩瑜 2022.07.21						
A02	增加BIS資訊網址 蔡春燕 180905						
A01	新製						
REV.	DESCRIPTION						
		UNIT: mm	MODEL NO.: 2AAJ012F				
		MATERIAL	PART NO.: G35-D018059-P200				
			DRAWING NO.: LABEL-18-24-01				
APPROVED	SAFETY	CHECKED	DESIGNED				
Andy	Jerry	Lilac	Lilac				
DATE: Dec.31,2015	DATE: Dec.31,2015	DATE: Dec.31,2015	DATE: Dec.31,2015				
THIRD ANGLE PROJECTION			<table border="1"> <tr> <td>SHEET</td> <td>M</td> </tr> <tr> <td>1 OF 1</td> <td>A4 L</td> </tr> </table>	SHEET	M	1 OF 1	A4 L
SHEET	M						
1 OF 1	A4 L						



僑威科技

1

2

3

4

5

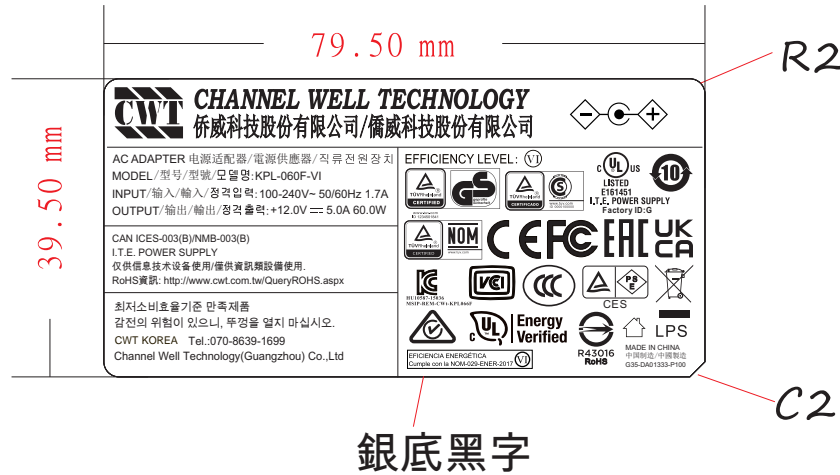
6

A

B

C

D



NOTE:

- 1. Material: Self-adhesive matt silver PET paper(網格底消銀龍) 100#.
(meet UL regulations)
- 2. Surface treatment : +OPP
- 3. Color: Silver characters on black.
- 4. Thickness: 0.12~0.15mm.
- 5. High temperature test: the need to temperature

備註:

材質: 100#網格底消銀龍+OPP(UL安規)
 顏色: 銀底黑字
 溫度測試: 需要耐溫80度, 2小時, 不翹皮等
 安規標誌依據安規符號標準製作
 尺寸要求為79.5*39.5mm 公差:(+0/-0.2)

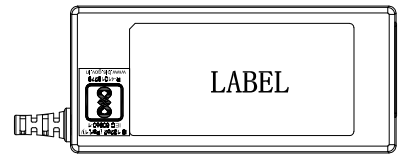
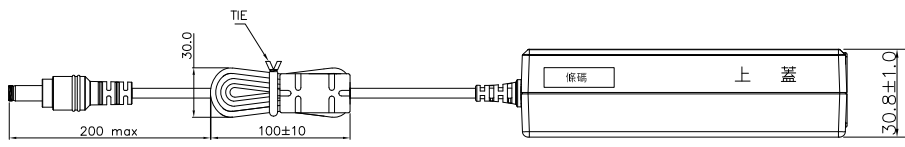
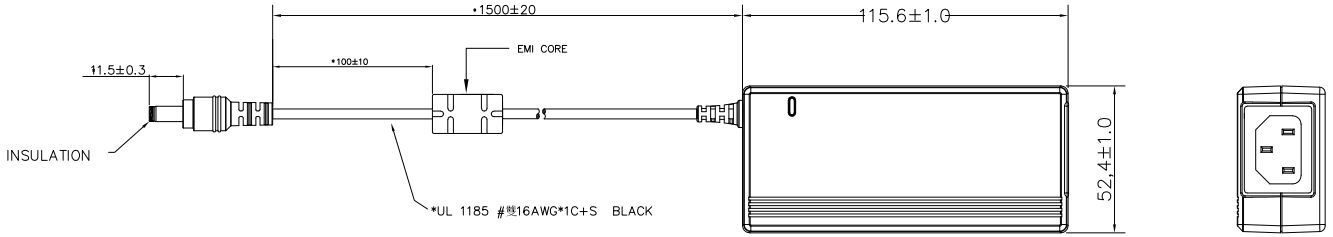
Material standard of environmental protection:

No	Hazardous Substances	Content Standards
1	銅 (Cu)	< 56 ppm
2	鉛 (Pb)	< 700 ppm
3	汞 (Hg)	< 700 ppm
4	六價鎘 (Cr ⁶⁺)	< 700 ppm
5	多環聯苯 (PBB)	< 700 ppm
6	多環二苯醌 (PBDE)	< 700 ppm
7	鄰苯二甲酸二(DEHP)	< 700 ppm
8	鄰苯二甲酸丁(DDBP)	< 700 ppm
9	鄰苯二甲酸二丁(DDBP)	< 700 ppm
10	鄰苯二甲酸二丁(DDBP)	< 700 ppm
11	包裝材料(Packaging materials)	總含量 < 100 ppm
12	多環芳烴化合物(PAHs)	NA

GENERAL TOLERANCE ± (UNLESS OTHERWISE SPECIFIED)			D01 NEW		
LEVEL	SELECT LEVEL:			ANGULAR TOLERANCE	
	A	B	C		
DIMENSION	8 ≤ X < 20	± 0.1	± 0.15	± 0.2	± 0.3°
	25 ≤ X < 100	± 0.15	± 0.25	± 0.4	
DIMENSION	100 ≤ X < 300	± 0.2	± 0.3	± 0.5	± 1°
	300 ≤ X < 800	± 0.3	± 0.5	± 0.8	± 1.5°

REV.	DESCRIPTION		
	UNIT: mm	MODEL NO.: KPL-060F-VI	
	MATERIAL	PART NO.: G35-DA01333-P100	
	DRAWING NO.:		
APPROVED	SAFETY	CHECKED	DESIGNED
zy. zhou	Jesse	zy. zhou	Nicole
DATE: Dec. 28, 2023	DATE: Dec. 28, 2023	DATE: Dec. 28, 2023	DATE: Dec. 28, 2023
THIRD ANGLE PROJECTION			
SHEET			M
1 OF 1			A4 L

REV.	DESCRIPTION	DESIGNED	DATE
A01	新製	hl.zhou	2022-07-25
A02	線材變更	hl.zhou	2022-09-27



NOTES:

1. CASE & CABLE COLOR : BLACK
2. CABLE SPEC.:**UL 1185 #雙16AWG*1C+S BLACK*
3. MODEL:G99-KPL060F-L394
4. PART NO.:G18-B3A215A-MT00

	APPROVED	hl.zhou	DRAWING NO.	G99-KPL060F-L394	UNIT	MM	REV.	A02
	TITLE	Desktop Switching Adapter	DATE	2022-07-25	MODEL NO.	KPL	TOLERANCES:	SHEET

1

2

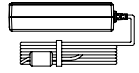
3

4

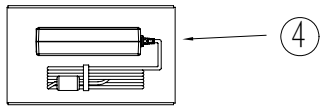
5

6

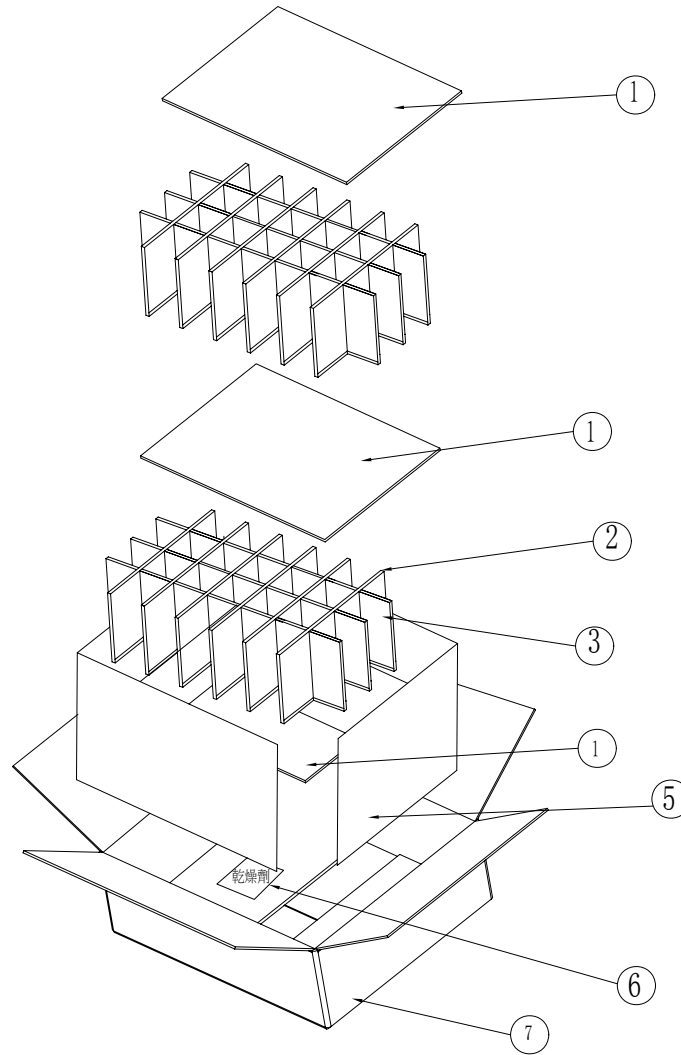
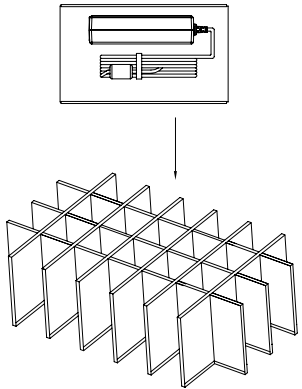
STEP1:將成品及線材整理如下圖



STEP2:將成品如圖般放入PE袋子內



STEP3:將成品如圖般放入格板內



1.組件:

1.1.:平卡:420*308mm

用量:3PCS

1.2.:三刀卡:422*146mm

用量:12PCS

1.3.:六刀卡:309*146mm

用量:6PCS

1.4.:PE袋:220*180mm

用量:56PCS

1.5.:圍板:435*321*312mm

用量:1PCS

1.6.乾燥劑:60*45mm ±5% 包裝材質網型紙
用量:3PCS

1.7.:外箱:452*334*330mm

用量:1PCS

Q'TY.: 56 PCS

N.W.: KGS

G.W.: KGS

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	X < 8	±0.1	±0.15	±0.3°
2	鉛 (Pb)	<800ppm	8 ≤ X < 25	±0.1	±0.2	±0.5°
3	汞 (Hg)	<800ppm	25 ≤ X < 100	±0.15	±0.25	±0.5°
4	六價鉻 (Cr)	<800ppm	100 ≤ X < 300	±0.2	±0.3	±1°
5	多溴聯苯 (PBB)	<800ppm	300 ≤ X < 800	±0.3	±0.5	±1.5°
6	多溴二苯醚 (PBDE)	<800ppm				
7	鎘,鉛,汞,六價鉻(包裝材料)	總含量<100ppm				

0.1	新制		
REV.		DESCRIPTION	
		UNIT: mm	MODEL NO.: KPL
		MATERIAL	PART NO.: KPL-452-334-330-01
		*****	DRAWING NO.:
APPROVED	CHECKED	DESIGNED	
DATE:	DATE:	DATE: 2017.12.11	SCALE: SHEET 1 OF 1
			M/A4L

A

B

C

D