Adapter Technology Co., Ltd.

Specification for Approval

Customer	:	**Energy Access**
Part Name	:	**AC Adapter**
Description	:	**24.0 Volts / 5.0 Amps**
Model No.	:	**ATS120TS-P240 (CoC Tier2)**
Customer P / N	:	**PS5024**
Product P / N	:	**ATS120TSP240515202**
Issued Date	:	**25 – Aug. – 2023**
Version	:	**A1**

Issued Stamp :

Customer's Approval Signature

ADAPTER TECHNOLOGY CO.,LTD.
Office (Taiwan)：6F,No.258, Liancheng Rd.,Zhonghe District,New Taipei City 235,Taiwan (R.O.C.)
TEL：+886-2-8226-2279 FAX：+886-2-8226-2238
E-mail : service@adaptertech.com.tw；service_tw@adaptertech.com.tw

Factory (China)：BOAYANG ELECTRONICS CO., LTD.

120.0 W
AC Adapter
SPECIFICATION

Model No.	:	**ATS120TS-P240 (CoC Tier2)**
Description	:	**24.0 Volts / 5.0 Amps**
Part No.	:	**ATS120TSP240515202**
Version	:	**A1**
Date	:	**25 – Aug. – 2023**

Approved	Reviewed	Checked	Prepared	Sales
		阿達特 2023.08.25 何鴻基	阿達特 2023.08.25 江品萱	

■ Approval Documents/Spec. Revised Records

- ■ Customer : Energy Access
- ■ Model No. : ATS120TS-P240
- ■ Original Documents Content : Spec. 11 Pages, Attachment 2 Pages

Revised Records : No.	Date	Description (Before / After)	Page(s) Revised	Revised By (Adapter/Customer)	Version
1	Aug./25/2023	Issue	-	Ray	A1

1. Feature：

- ♦ Input ： Universal 100 ~ 240 Vac / 50 ~ 60 Hz Input, without any slide switch.
- ♦ Output ： +24.0 V / 0 ~ 5.0 A
- ♦ Case Dimension ： 132 (L) * 51 (W) * 32 (H) ± 1 mm
- ♦ Efficiency ： Eff (av) ≧ 88% (at 115 Vac for DoE level VI)
Eff (av) ≧ 89% (at 230 Vac for CoC tier2)
Eff ≧ 79% @ 10% load
- ♦ Safety ： CUL / UL / GS / PSE / BSMI / UKCA
- ♦ EMI ： CE / FCC (conduction & radiation Class B)
- ♦ Protection ： OVP (Over Voltage Protection)、SCP (Short Circuit Protection)、
OCP (Over Current Protection)、OTP (Over Temperature Protection)
- ♦ Suitable for usage at I.T.E., industrial controller
- ♦ Meet DoE Level VI / ErP (Lot 7) / CoC Tier2

2. Input：

2.1 Voltage	Universal 100 ~ 240 Vac, single phase
2.2 Frequency	50 ~ 60 Hz
2.3 Current	1.6 A Max.
2.4 Inrush Current	80 A Max. / 230 Vac (Cold start at 25℃，full load) (ac source chroma 6530)
2.5 Efficiency	Eff (av) ≧ 89% (230 V/50 Hz input for CoC Tier2) Eff ≧ 79% (At 230 V/50 Hz input@10% load for CoC Tier2) Eff (av) ≧ 88% (115 V/60 Hz input for Level VI)
2.6 Power Consumption	Pi ≦ 0. 15 W (At 115 Vac & 230 Vac & At No load)
2.7 Power Factor (PF)	Pi ≧ 0. 9 (At 115 Vac & 230 Vac, At Full load)

※$Eff_{(av)} = \frac{E_1 + E_2 + E_3 + E_4}{4}$ E1=efficiency with 25% rated load ; E2= efficiency with 50% rated load

E3=efficiency with 75% rated load ; E4= efficiency with 100% rated load

3. Output：

3.1 DC Output	Voltage	+24.0 V ± 5%
	Current	5.0 A Max.
	Regulation	22.8 Vmin. ~ 24.0 Vtyp. ~ 25.2 Vmax.
	Ripple & Noise	240 mVp-p Max.
	Total Power	120.0 W Max.

Remark : For ripple & noise measurement, use a 20MHz bandwidth frequency oscilloscope, and add a 0.1μF multilayer Cap. and a Low ESR Electrolytic Cap. (47 μF) at output connector terminals. (At nominal line voltage, full load)

4. Protection :

4.1 Over Voltage Protection (OVP)	V out * 150% Max., latch off.(50% Load)
4.2 Short Circuit Protection (SCP)	Shut down before around eight seconds or around four times of automatic recovery
4.3 Over Current Protection (OCP)	I out * 150% Max.
4.4 Over Temperature Protection (OTP)	Latch

Remark : When over temprature protection is activated, the power supply will latch.
When short circuit protection or over current protection is activated, the power supply will attempt to recover around eight seconds or around four times automatically. If the abnormal condition resulting in the failure isn't removed, the power supply will shut down eventually.
When over voltage protection is activated at 50% load, the power suppl latch directly.

5. Safety requirement :

5.1. Dielectric strength : Cut off current 10 mA

(1)	Primary to secondary	3000 Vac (RMS) for 1 minute
(2)	Primary to Frame Ground	1770 Vac (RMS) for 1 minute
※ Secondary return isolated to FG		

5.2. Insulation resistance :

(1)	Primary to secondary	10 MΩ for 500 Vdc
(2)	Primary to Frame Ground	10 MΩ for 500 Vdc
※ Secondary return isolated to FG		

5.3 Leakage current : Less than 3.5 mA

5.4 Grounding test : < 0.1Ω

6. Operation and Environment Performance :

6.1 Temperature Range

Operating	-20ºC ~ +40ºC
Storage	-20ºC ~ +80ºC

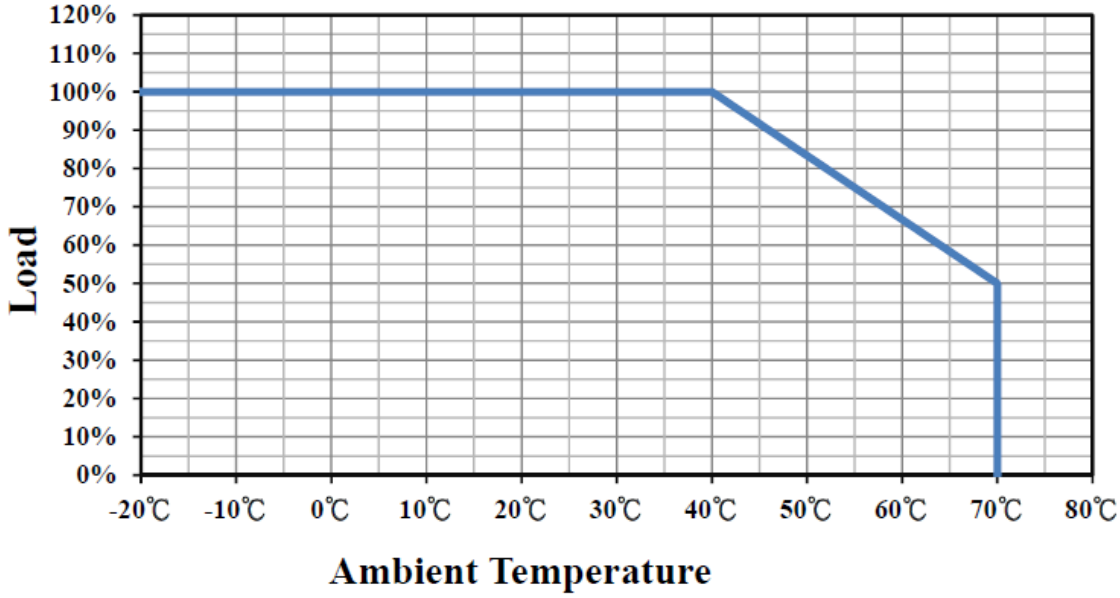
6.2 Humidity Range(Non-condensing)

Operating	20% ~ 80% RH
Storage	10% ~ 90% RH

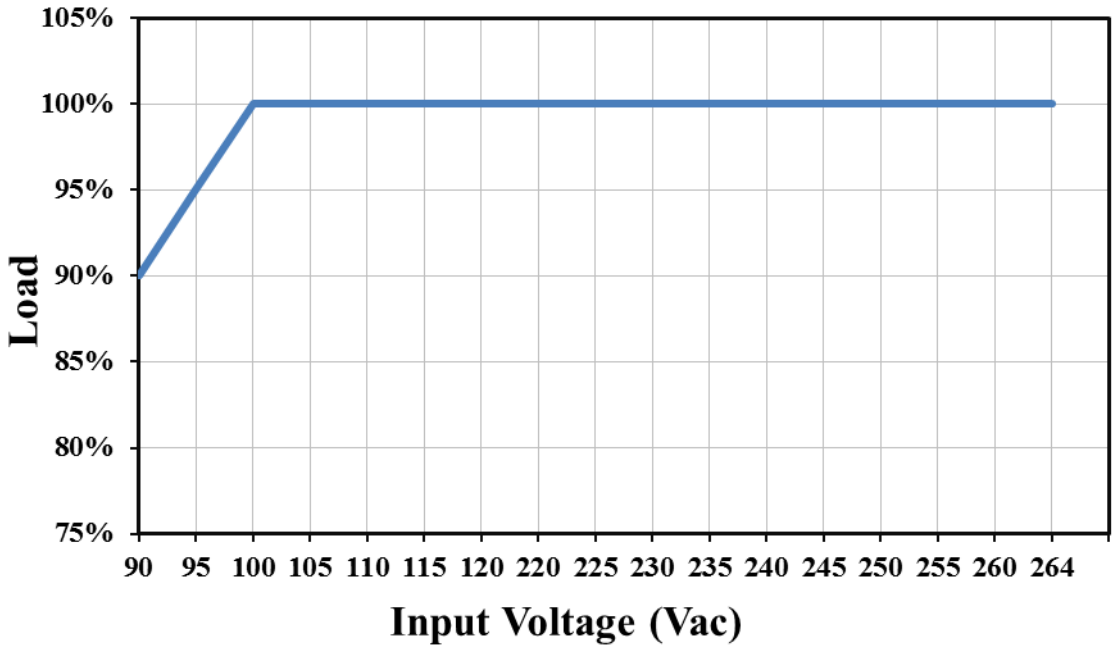
6.3 Cooling : By natural air.

7. M.T.B.F. : 300,000 Hrs.(Calculated Hours at 25ºC , By Telcordia SR-332)

8. Derating Curve：



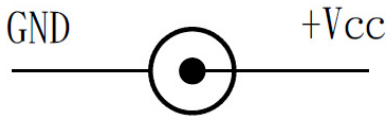
9. Static Characteristics：



10. Mechanical :

10.1 Weight : 336g Ref.

10.2 Cable type : Black UL 11352 16 AWG
(wire + plug)
Plug : ϕ5.5 * ϕ2.5 * 9.5 mm
(cannelure)



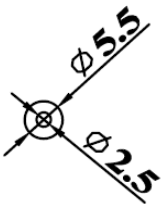
Output cable plug pin assignment

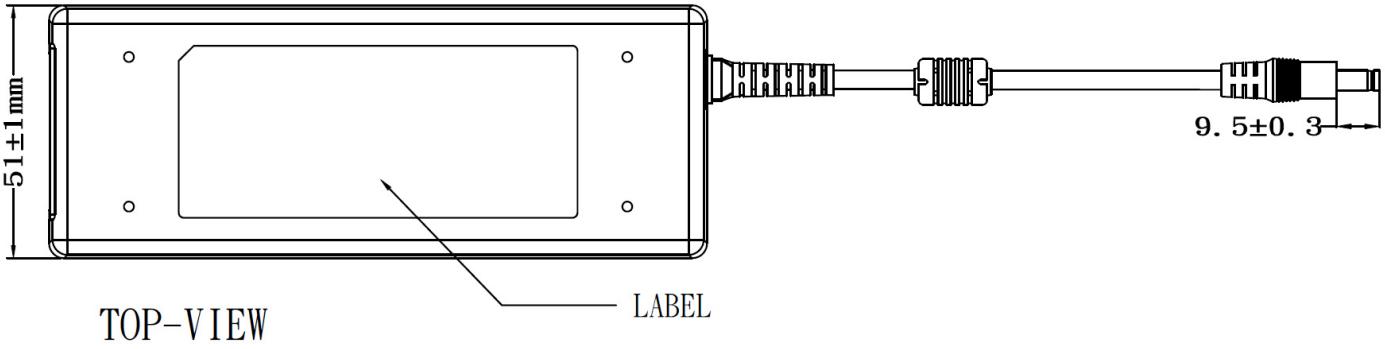
10.3 Cable length : 1500 mm

10.4 Case dimension : 132mm(L) * 51mm(W) * 32mm(H) ± 1 mm

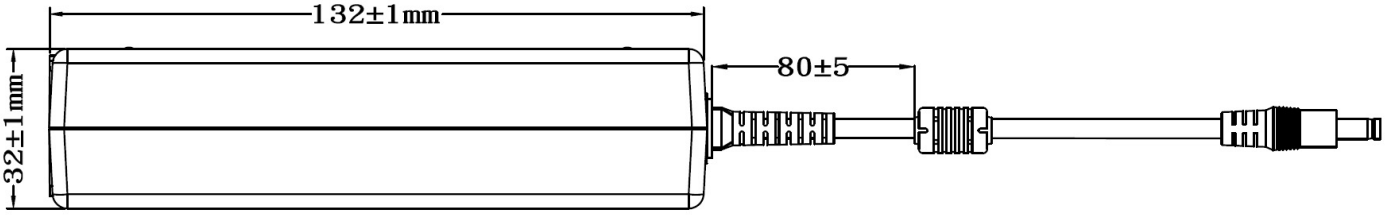
10.5 Material flammability : UL 94V-0

10.6 External appearance : As drawing below (scale → mm)

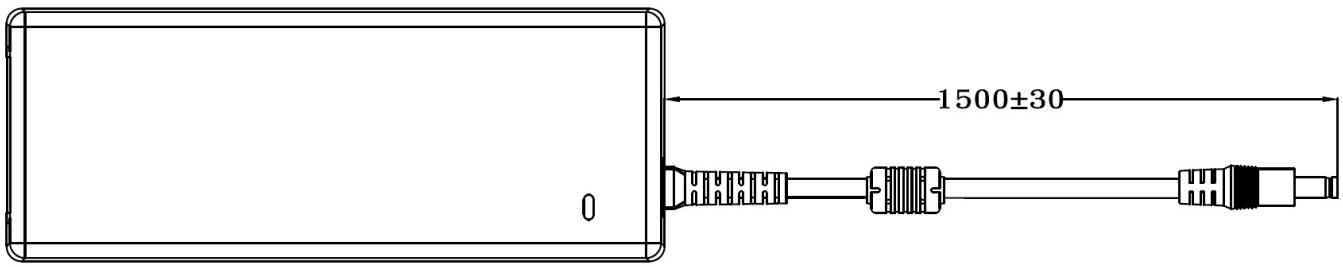




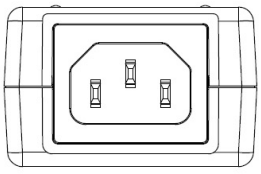
TOP-VIEW



SIDE-VIEW



BOTTOM-VIEW

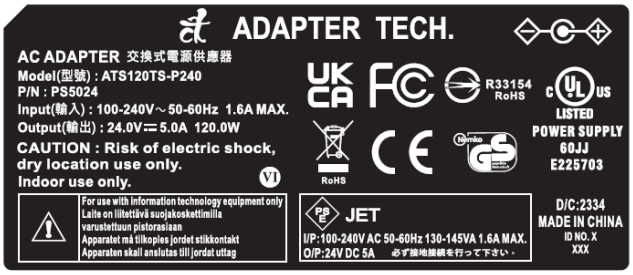


FRONT-VIEW

11. Label :

11.1	Label materials	:	Metalized polyester label (silver gloss)
11.2	Color	:	Black background with silver printing
11.3	Label dimension	:	79 (L) * 33.5 (W) ± 0.1 mm
11.4	Label thickness	:	75#

100%



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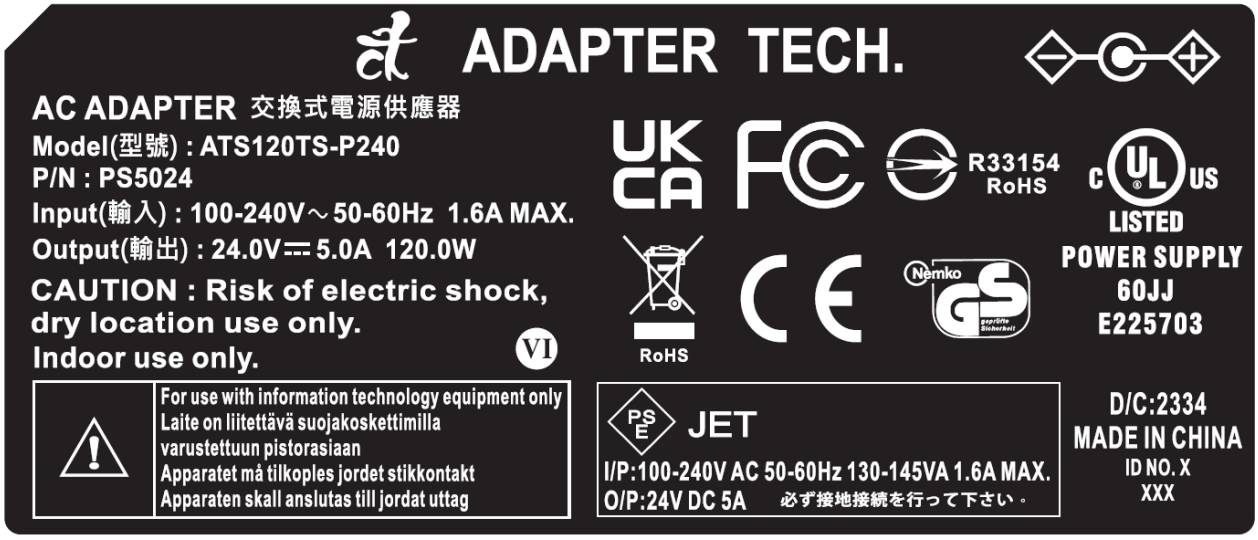


"XXX"
Label supplier's code.
It is accurate that the number of words depends on the real finished product.

ID NO."X"
Manufacturer's code.
It is accurate that the number of words depends on the real finished product.

Label Part No.:9443129700

A. Line Regulation Test

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
90 Vac / 50% Load	22.8 V ~ 25.2 V	24.077 V	24.167 V	
115 Vac / 50% Load	22.8 V ~ 25.2 V	24.077 V	24.167 V	
132 Vac / 50% Load	22.8 V ~ 25.2 V	24.077 V	24.167 V	
180 Vac / 50% Load	22.8 V ~ 25.2 V	24.077 V	24.167 V	
230 Vac / 50% Load	22.8 V ~ 25.2 V	24.082 V	24.163 V	
264 Vac / 50% Load	22.8 V ~ 25.2 V	24.082 V	24.163 V	

B. Efficiency Test

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115 Vac	88% Min.	91.332%	91.342%	
230 Vac	89% Min.	91.872%	91.906%	
230 Vac@10% load	79% Min.	88.382%	88.853%	

$$Eff_{(av)} = \frac{E_1 + E_2 + E_3 + E_4}{4}$$

E1=efficiency with 25% rated load ; E2= efficiency with 50% rated load

E3=efficiency with 75% rated load ; E4= efficiency with 100% rated load

C. Load Regulation Test

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115 Vac / 0% Load	22.8 V ~ 25.2 V	24.293 V	24.385 V	
115 Vac / 50% Load	22.8 V ~ 25.2 V	24.077 V	24.167 V	
115 Vac / 100% Load	22.8 V ~ 25.2 V	23.816 V	23.942 V	
230 Vac / 0% Load	22.8 V ~ 25.2 V	24.292 V	24.384 V	
230 Vac / 50% Load	22.8 V ~ 25.2 V	24.082 V	24.163 V	
230 Vac / 100% Load	22.8 V ~ 25.2 V	23.860 V	23.930 V	

D. Ripple & Noise Test

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115 Vac / 100% Load	240 mVp-p Max	54.4 mVp-p	54.4 mVp-p	
230 Vac / 100% Load	240 mVp-p Max	54.8 mVp-p	54.9 mVp-p	

E. Inrush Current

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
230 Vac / 100% Load	80 A Max.	60.6 A	63.8 A	

F. Over Voltage Protection

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115 Vac / 50% Load	Vout*150% Max.	127%	125%	
230 Vac / 50% Load	Vout*150% Max.	127%	125%	

G. Over Current Protection

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115 Vac / 100% Load	Iout*150% Max.	130%	130%	
230 Vac / 100% Load	Iout*150% Max.	132%	132%	

H. Short Circuit Protection

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115 Vac / 100% Load	Shut down	OK	OK	
230 Vac / 100% Load	Shut down	OK	OK	

I. Input Power Consumption(No Load)

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
230 Vac / 0% Load	≦ 0.15 W	0.105 W	0.101 W	

J. Power Factor

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115 Vac / 100% Load	≧ 0.9	0.982	0.994	
230 Vac / 100% Load	≧ 0.9	0.970	0.948	

Efficiency Test Report

A.	Model Number	: ATS120TS-P240	24.0V	5.00A	120.00W
B.	DC Power Cord	: UL11352 16AWG, 1.5M			
C.	Average Efficiency	:			
	Erp (LOT 7)	88.0%	Min.		
	DoE Level VI	88.0%	Min.		
	GEMS Level VI	88.0%	Min.		
	CoC Tier 2	89.0%	Min.		
	CoC Tier 2 (10% Load)	79.0%	Min.		
D.	NO Load Power Consumption	:			
	Erp (LOT 7)	0.21W Max.			
	DoE Level VI	0.21W Max.			
	GEMS Level VI	0.21W Max.			
	CoC Tier 2	0.15W Max.			
E.	Testing Dequipment	:			
	a. AC Power Source	: " Chroma "	61604		
	b. Electronic Load	: " PRODIGIT "	3311F		
	c. Power Meter	: " YOKOGAWA "	WT-310A		
	d. Digital Meter	: " FLUKE "	45		
F.	AC Input Voltage	: 115Vac/60Hz			

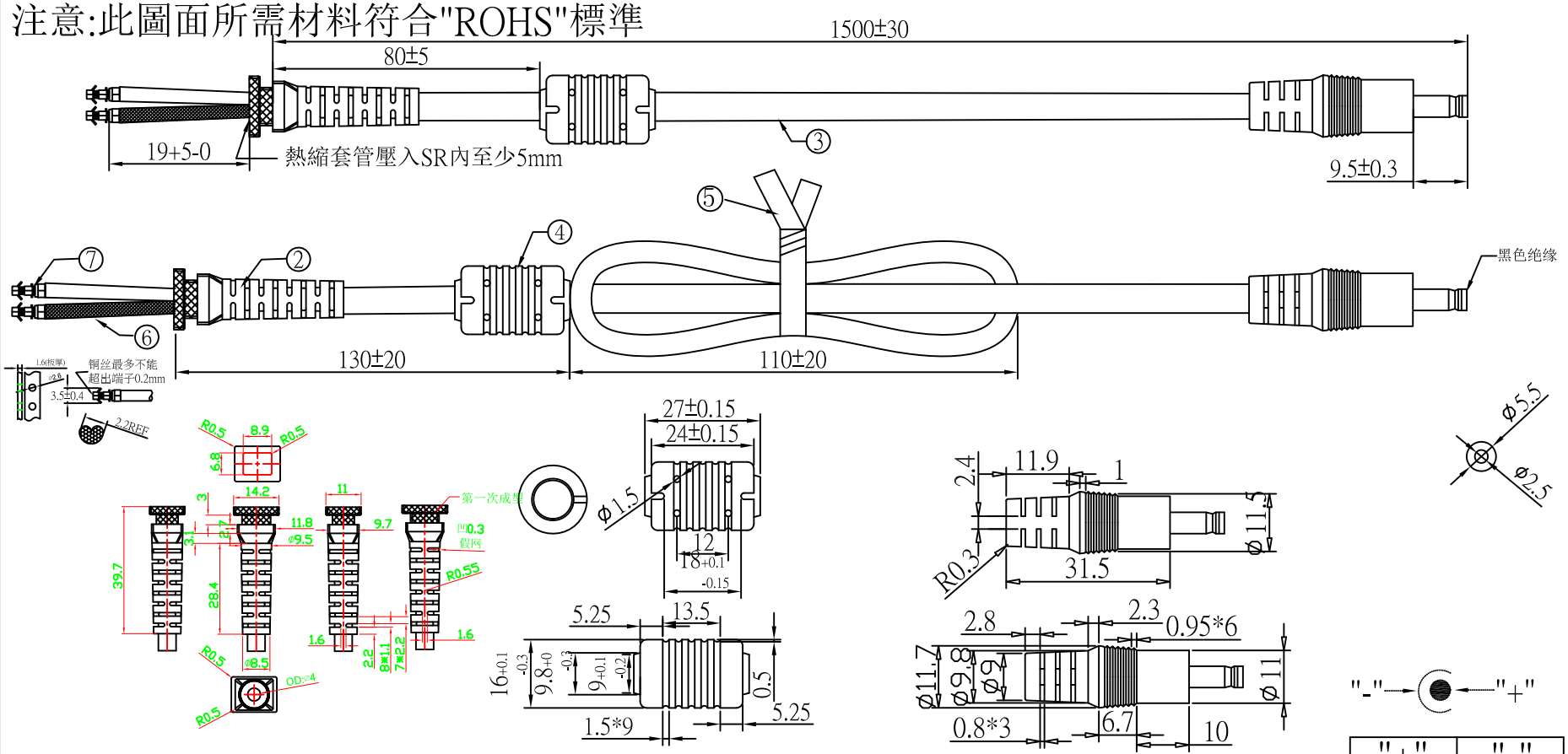
Load Conditions / Reported Quantity	100%* I_0	75%* I_0	50%* I_0	25%* I_0	10%* I_0	0%* I_0
Rms Output Current(mA)	5000mA	3750mA	2500mA	1250mA	500mA	0mA
Rms Output Voltage(V)	23.861V	23.968V	24.077V	24.186V	24.253V	24.293V
Active Output Power(W)	119.31W	89.88W	60.19W	30.23W	12.13W	0.00W
Rms Input Voltage(V)	115V	115V	115V	115V	115V	115V
Rms Input Current(A)	1.144A	0.862A	0.587A	0.303A	0.138A	0.026A
Rms Input Power(W)	130.370W	97.800W	65.530W	33.570W	14.276W	0.098W
True Power Factor (PF)	0.991	0.987	0.971	0.963	0.899	0.032
Total Harmonic Distortion of the input current	17.3A%	19.8A%	29.2A%	26.3A%	30.3A%	11.1A%
Power Consumed by UUT(W)	11.065W	7.920W	5.337W	3.338W	2.150W	0.098W
Active Efficiency	91.513%	91.902%	91.855%	90.058%	84.943%	*
Average Efficiency	91.332%				84.943%	*

G. AC Input Voltage : 230Vac/50Hz

Load Conditions / Reported Quantity	100%* I_0	75%* I_0	50%* I_0	25%* I_0	10%* I_0	0%* I_0
Rms Output Current(mA)	5000mA	3750mA	2500mA	1250mA	500mA	0mA
Rms Output Voltage(V)	23.860V	23.970V	24.082V	24.190V	24.252V	24.292V
Active Output Power(W)	119.30W	89.89W	60.21W	30.24W	12.13W	0.00W
Rms Input Voltage(V)	230V	230V	230V	230V	230V	230V
Rms Input Current(A)	0.574A	0.437A	0.302A	0.179A	0.109A	0.041A
Rms Input Power(W)	128.540W	96.790W	65.270W	33.760W	13.720W	0.101W
True Power Factor (PF)	0.974	0.962	0.939	0.822	0.548	0.011
Total Harmonic Distortion of the input current	24.2A%	26.1A%	25.6A%	31.1A%	50.4A%	3.9A%
Power Consumed by UUT(W)	9.240W	6.903W	5.065W	3.523W	1.594W	0.101W
Active Efficiency	92.812%	92.869%	92.240%	89.566%	88.382%	*
Average Efficiency	91.872%				88.382%	*

Tester : Ray

注意:此圖面所需材料符合"ROHS"標準



"+"	"-"
白色芯線	隔離線

① 5.5*2.5*21內縮車溝黑色半邊(内缩1.0MM),外模P-184號模(二次成型),
用料外PVC60P黑色

② SR-BY-033号模(阿达特模号：外模:SR-A003003/内模:SR-A003001-IN）(二次成型),外模用料PVC75P黑色, 内模用料PVC25P黑色(防火等级:94V-0)), 吊重:1米/20磅/60秒

③ UL 11352 16AWG(0.12*115)單芯隔離線(0.12*115) BK亮 OD:4.0 裁線長度:1540+10/-0

④ 鐵芯規格:12*20*5.6 ,外模SR-136號模用料PVC60P黑色

⑤ PE无鐵芯紮帶10CM黑色

⑥ 熱縮套管:ø2.0*27

⑦ 双钩机板端D262A*2PCS(旗欣提供)

⑧ 單位:MM

*注:BY-031(SR-A003001)&BY-032(SR-A003002)&BY-033(SR-A003003)&BY-034(SR-A004001)
共用内模(SR-A003001-IN)

一 般 公 差 表			
1.0mm以下	±0.1mm	15.0mm以下	±0.6mm
2.0mm以下	±0.15mm	20.0mm以下	±0.8mm
3.0mm以下	±0.20mm	30.0mm以下	±1.0mm
10.0mm以下	±0.5mm	30.0mm以上	±1.2mm

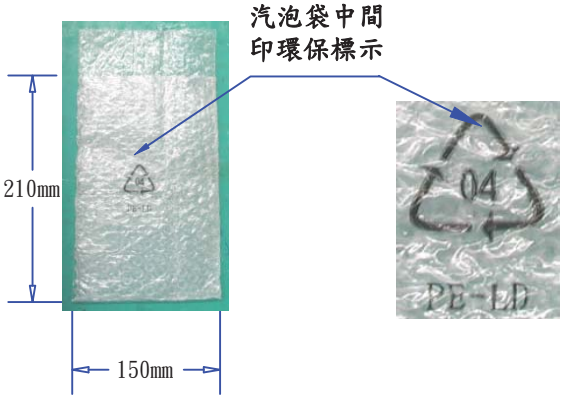
版次	變更內容	日期
02		
01	新出	2023/08/23

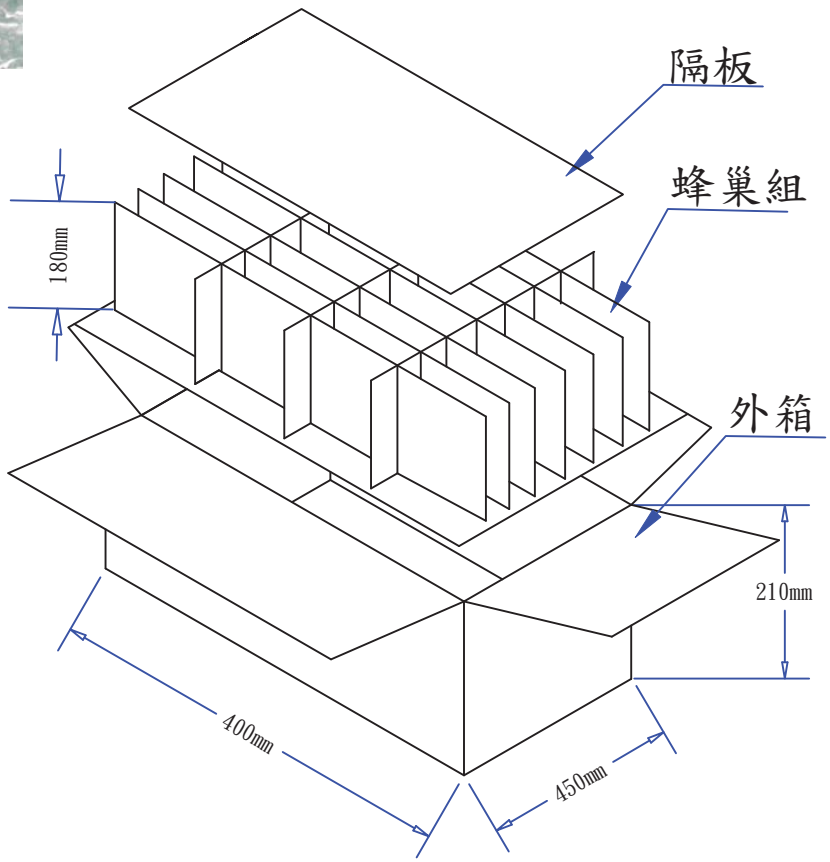
料號	D1418235311152101601		
客戶	阿達特	制圖	陶胜英
頁數	01	審核	
		批準	
泰岳電子有限公司			
圖號	ADT-7397	日期	2023/08/23

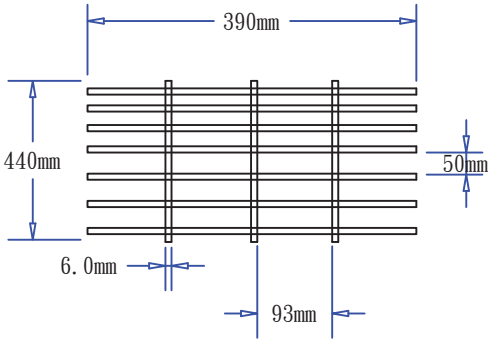
V 用膠帶封口	
□ 無需膠帶封口	

REVISIONS

SHOW	REV	DESCRIPTION	DATE	APPROVED
1	A	初版制作	2/7	SUN
1	B	紙箱高度太高容易壓壞	07/10/30	SUN
2	C	外箱,隔板,刀卡改用為K=K材質	12/08/21	SUN
3	D	外箱料號變更(因為申請料號描述錯誤)	13/12/27	SUN
4	E	更新格式	21/11/11	SUN







PIS90W00007 包裝(FOR 90W) 環保雙面氣泡袋-刀卡-32

9550019001	1. 隔板:440(L)*390(W)*6mm	K=K	2/32
	2. 數量:32*1=32PCS		
9520025902	3. 外箱:450(L)*400(W)*210(H)mm	K=K	1/32
9560021201	4. 3刀卡:390(L)*180(W)*6mm(中分)	K=K	7/32
9560021101	5. 7刀卡:440(L)*180(W)*6mm(中分)	K=K	3/32
9540000901	6. 環保氣泡袋:210(L)*150(W)*47mm 無色透明,雙層,短邊開口,中間印刷環保標誌(印刷在長邊那一側).		1/1

7. 線材擺放在本體旁裝入環保氣泡袋中,銘版與環保標示同一側,SR朝上裝入蜂巢,方向必須統一.
8. 外箱標注的為外徑尺寸;上述所有材料須符合環保ROHS標準.

阿達特科技股份有限公司 正式 工程二部 發行章

阿達特科技股份有限公司
Adapter Technology Co., Ltd.

DRAWING NO. PIS90W00007		APPROVAL 1 BY		
UNIT mm	MODEL NO STD-2437-90W系列	APPROVAL 2 BY		
	FILE NO. ADT-0145	CHECKED BY(ENGINEER)	Sun	2021/11/11
SCALE	REV. E SHEET 1/1	DRAWN BY	Moon	2021/11/11

Apply for sales	Apply for engineer	Use the sales	Use the engineer
	阿達特 2021.11.12 徐東昇		