Adapter Technology Co., Ltd.

Specification for Approval

Customer	:	**Energy Access**
Part Name	:	**AC ADAPTER**
Description	:	**24.0 Volts / 1.0 Amps**
Model No.	:	**ATS024T-W240V (Level VI)**
Customer P / N	:	**PS1024**
Product P / N	:	**ATS024TW240V518201**
Issued Date	:	**13 – Oct. – 2017**
Version	:	**A1**
Issued Stamp	:	

Customer's Approval Signature

Digitally signed by Joshua Renicker
DN: cn=Joshua Renicker, o=Energy Access Inc, ou, email=jrenicker@energyaccess.com, c=US
Date: 2017.10.16 11:29:45 -04'00'

ADAPTER TECHNOLOGY CO.,LTD.
Office (Taiwan)：6F-9,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_tw@ adaptertech.com.tw；service@ adaptertech.com.tw

Factory (China)：BOAYANG ELECTRONICS CO., LTD.
Di Feng Gong Ye Qu 2 Hao,Xiasha Liuwu Village, Shipai Town, Dong Guan City, Guang Dong Province,China
TEL：86-0769-8905-5998；86-0769-8136-9899；86-0769-8136-9008
FAX：86–0769-8136-9009

24W
AC Adapter
SPECIFICATION

Model No.	:	**ATS024T-W240V (Level VI)**
Description	:	**24.0 Volts / 1.0 Amps**
Part No.	:	**ATS024TW240V518201**
Version	:	**A1**
Date	:	**13 – Oct. – 2017**

Approved	Reviewed	Checked	Prepared	Sales
		阿達特 2017.10.13 陳諺中	阿達特 2017.10.13 陳諺中	阿達特 2017.10.16 Ling

Approval Documents/Spec. Revised Records

- Customer : Energy Access
- Model No. : ATS024T-W240V
- Original Documents Content : Spec. 10 Pages, Attachment 3 Pages

Revised Records : No.	Date	Description (Before / After)	Page(s) Revised	Revised By (Adapter/Customer)	Remark
1	Oct./13/2017	Issue	-	Wade	A1

1. Feature：

- ♦ **Input** ： **Universal 100 ~ 240 Vac / 50 - 60 Hz Input, without any slide switch.**
- ♦ **Output** ： **24V / 0~1A**
- ♦ **Case Dimension** ： **75mm(L)*35.8mm(W)*65.6mm(H)(±1mm)**
- ♦ **Efficiency** ： **Eff (av) ≧ 86.204% Min.**
- ♦ **Safety** ： **UL / CUL / PSE / BSMI / RCM**
- ♦ **EMI** ： **CE / FCC Class B ； Conduction & Radiation Met.**
- ♦ **Protection** ： **OVP (Over Voltage Protection)、SCP (Short Circuit Protection)、OCP (Over Current Protection)**
- ♦ **High frequency design，less power consumption.**
- ♦ **Suitable for usage at Telecommunication, Computer, Industrial Controller, & OA System.**
- ♦ **Meet DOE / Erp / MEPS.**

2. Input：

2.1 Voltage	**Universal 100~240Vac, single phase**
2.2 Frequency	**50 - 60 Hz**
2.3 Current	**0.58A Max.**
2.4 Inrush Current	**50A Max. / 100Vac ； 60A Max. / 230Vac (Cold Start At 25 ºC，Full Load)**
2.5 Efficiency	**Eff (av) ≧ 86.204% Min. (At 115 Vac & 230 Vac)**
2.6 Power Consumption	**Pi ≦ 0.1W (At 230Vac & No 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**	**+24.0V ±5%**
	Current	**1.0A Max.**
	Regulation	**22.80Vmin. ~ 24.00Vtyp. ~ 25.20Vmax.**
	Ripple & Noise	**240 mV Max.**
	Total Power	**24W 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. (10 μF) at output connector terminals. (At nominal line voltage, Full Load)

4. Protection :

4.1 Over Voltage Protection (OVP)	45V Max.
4.2 Short Circuit Protection (SCP)	Automatic recovery after short-circuit fault being removed
4.3 Over Current Protection(OCP)	2.5A Max.

Remark : When Short Circuit Protection is activated,the power supply will shutdown automatically.

Once the abnormal condition resulting in the failure being removed, the power supply will restart accordingly. When Over Voltage Protection is activated, the power supply will shutdown.

5. Safety、EMI and EMC Requirement：

5.1 Safety Requirement

a. Safety ： UL / CUL / PSE / BSMI / RCM

b. Dielectric Strength ： 10mA Max. Cut off current

(1)	Primary to Secondary	3000Vac for 1 Minute

c. Insulation Resistance ：

(1)	Primary to Secondary	10 M ohm for 500Vdc

5.2 EMI Requirement ： CE / FCC Class B ； Conduction & Radiation Met.

5.3 Leakage Current ： Less than 0.25mA

6. Operation and Environment Performance：

6.1 Temperature Range

Operating	+ 0ºC ~ + 40ºC
Storage	- 20 ºC ~ + 80 ºC

6.2 Humidity Range(Non-condensing)

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

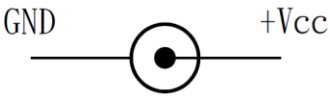
6.3 Cooling：By natural air

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

8.Mechanical :

8.1 Weight : 170 g Typical

8.2 Cable Type : Black UL2468 22AWG
(Wire + Plug)
Plug : ∅5.5*∅2.5*9.5mm
(Tuning Fork & Cannelure)



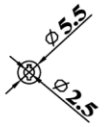
Output Cable Plug Pin Assignment

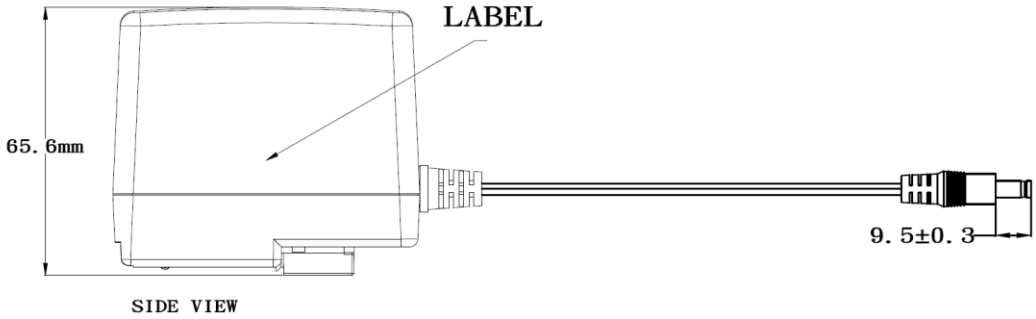
8.3 Cable Length : 1800mm

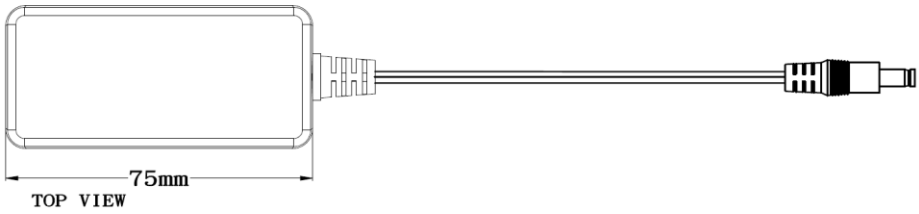
8.4 Case Dimension : 75mm(L)*35.8mm(W)*65.6mm(H) (±1mm)

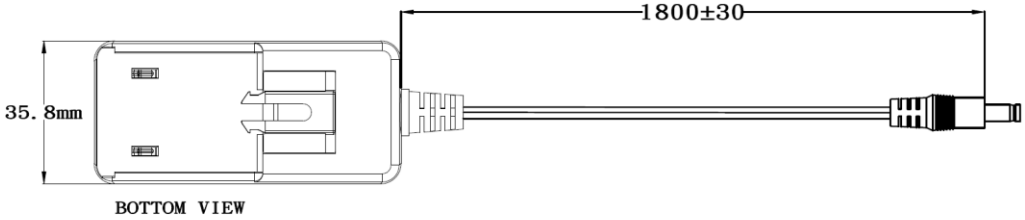
8.5 Material Flammability : UL 94V-0

8.6 External Appearance : As drawing below (Scale → mm)

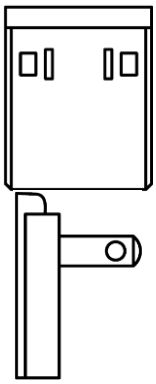
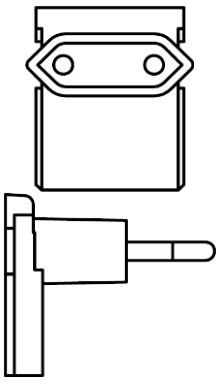
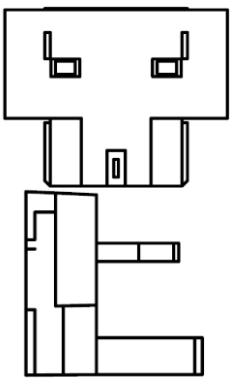
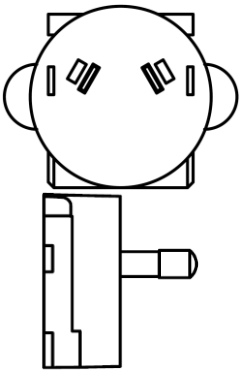
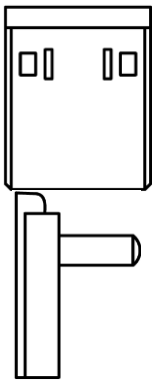
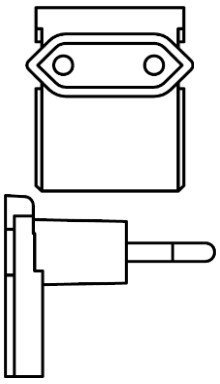








8.7 AC Plug: (L*W*H ±0.5mm)

■ USA	■ Europe	■ U.K.	■ Australia	□ China	□ Korea
39.2*31.2* 26	39.2*35*45	39.2*48.6*37.5	40*55*34	39.2*31.2* 26	39.2*35*45
					

8.7 Spec. Label Materials : Metalized Polyester Label (Silver Gloss)
Color : Black Background with Silver Printing
Label Dimension : 27.5mm(L)*61.8mm(W)+/-0.1mm
Label Thickness : #75

100%

200%

"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. :9443083100

A. Line Regulation Test

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
90Vac / 50 % Load	22.80~25.20 V	23.884 V	23.878 V	23.833 V
115Vac / 50 % Load	22.80~25.20 V	23.884 V	23.878 V	23.833 V
132Vac / 50 % Load	22.80~25.20 V	23.884 V	23.878 V	23.833 V
180Vac / 50 % Load	22.80~25.20 V	23.884 V	23.878 V	23.833 V
230Vac / 50 % Load	22.80~25.20 V	23.884 V	23.878 V	23.833 V
264Vac / 50 % Load	22.80~25.20 V	23.884 V	23.878 V	23.833 V

B. Efficiency Test

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac	86.204% Min.	89.141%	89.139%	88.940%
230Vac	86.204% Min.	88.771%	88.332%	88.311%

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

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
115Vac / 0 % Load	22.80~25.20 V	23.974 V	23.974 V	23.974 V
115Vac / 50 % Load	22.80~25.20 V	23.884 V	23.878 V	23.833 V
115Vac / 100 % Load	22.80~25.20 V	23.779 V	23.777 V	23.727 V
230Vac / 0 % Load	22.80~25.20 V	23.986 V	23.986 V	23.986 V
230Vac / 50 % Load	22.80~25.20 V	23.880 V	23.875 V	23.830 V
230Vac / 100 % Load	22.80~25.20 V	23.777 V	23.775 V	23.729 V

D. Ripple & Noise Test

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	240mVpp Max	35.2mVpp	34.0mVpp	33.2mVpp
230Vac / 100 % Load	240mVpp Max	32.6mVpp	35.0mVpp	34.6mVpp

E. Inrush Current

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
100Vac / 100 % Load	50A Max.	34.2A	35.2A	33.2A
230Vac / 100 % Load	60A Max	38.2 A	37.4 A	37.8 A

F. Over Current Protection

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac	2.5A Max.	1.62A	1.60A	1.66A
230Vac	2.5A Max.	1.57A	1.58A	1.63A

G. Short Circuit Protection

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac	Auto Recovery	OK	OK	OK
230Vac	Auto Recovery	OK	OK	OK

H. Input Power Consumption(No Load)

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
230Vac / 0 % Load	≦ 0.1W	0.069W	0.069W	0.068W

Efficiency Test Report

A. Model Number : ATS024T-A/P/W240Z (24V / 1A / 24W)

B. DC Power Cord : UL2468 22WG , 1.5M

C. Average Efficiency :

Erp (Stage 2)	(0.063*Ln(Nameplate Output)+0.622) = 82.22 % Min.
MEPS V	(0.0626*Ln(Nameplate Output)+0.622) = 82.09 % Min.
DOE Level VI	(0.071*ln(Pout)-0.0014*Pout+0.67) = 86.204% Min.
GEMS VI	(0.071*ln(Pout)-0.0014*Pout+0.67) = 86.204% Min.
COC Tier 2	(0.071*ln(Pno)-0.00115*Pno+0.67) = 86.804% Min.
COC Tier 2 (10% Load)	(0.071*ln(Pno)-0.0014*Pno+0.57) = 76.204% Min.

D. NO Load Power Consumption :

Erp (Stage 2)	0.3W Max.
MEPS V	0.3W Max.
DOE Level VI	0.1W Max.
GEMS VI	0.1W Max.
COC Tier 2	0.075W Max.

E. Testing Dequipment :

a. AC Power Source	" Zentech "	2700M-10
b. Electronic Load	" PRODIGIT "	3311C
c. Power Meter	" YOKOGAWA "	WT-210A
d. Digital Meter	" FLUKE "	45

F. AC Input Voltage : 115Vac/60Hz

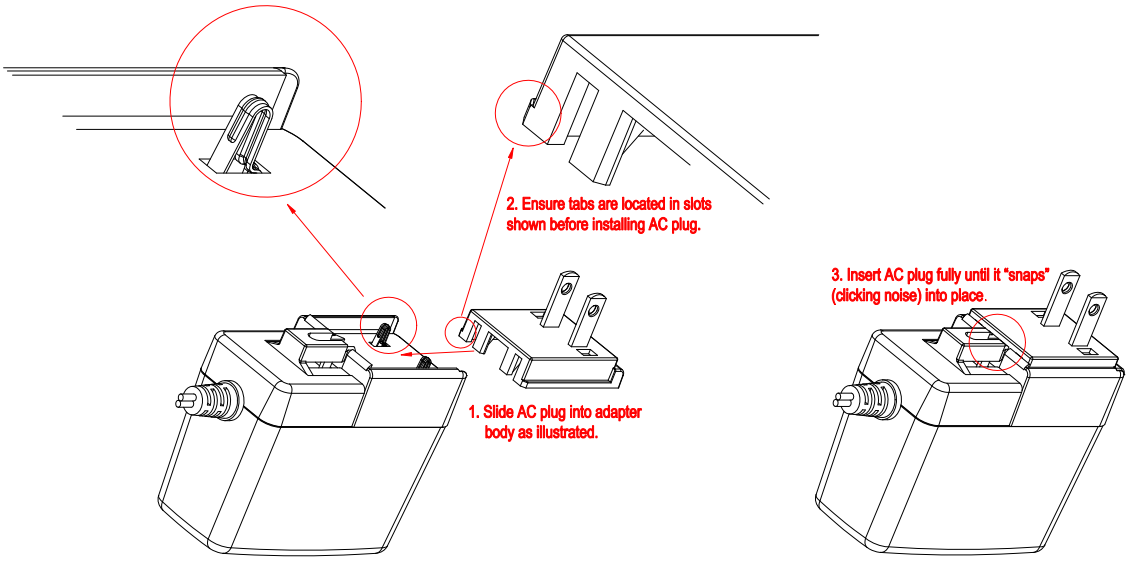
Load Conditions / Reported Quantity	100%* I_0	75%* I_0	50%* I_0	25%* I_0	10%* I_0	0%* I_0
Rms Output Current(mA)	1000mA	750mA	500mA	250mA	100mA	0mA
Rms Output Voltage(V)	23.616V	23.685V	23.743V	23.805V	23.844V	23.869V
Active Output Power(W)	23.62W	17.76W	11.87W	5.95W	2.38W	0.00W
Rms Input Voltage(V)	115V	115V	115V	115V	115V	115V
Rms Input Current(A)	0.437A	0.343A	0.250A	0.145A	0.066A	0.012A
Rms Input Power(W)	26.950W	19.990W	13.370W	6.700W	2.746W	0.043W
Power Consumed by UUT(W)	3.334W	2.226W	1.499W	0.749W	0.362W	0.043W
Efficiency	87.629%	88.863%	88.792%	88.825%	86.832%	*
Average Efficiency	88.527%				86.832%	*

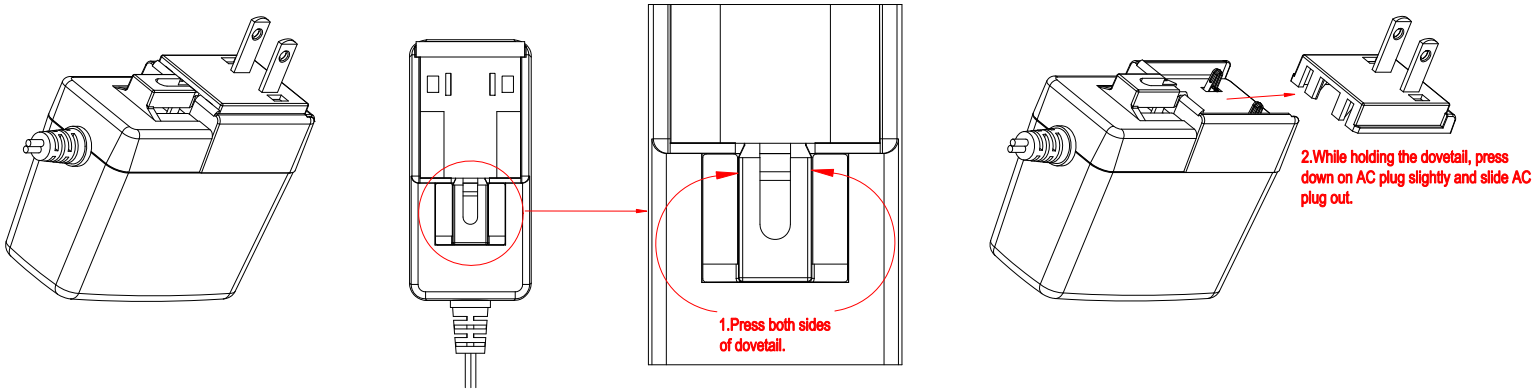
G. AC Input Voltage : 230Vac/50Hz

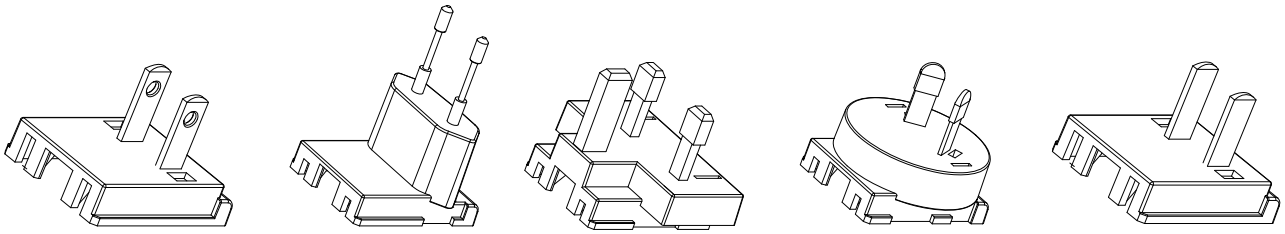
Load Conditions / Reported Quantity	100%* I_0	75%* I_0	50%* I_0	25%* I_0	10%* I_0	0%* I_0
Rms Output Current Load Conditions	1000mA	750mA	500mA	250mA	100mA	0mA
Rms Output Voltage(V)	23.611V	23.676V	23.741V	23.803V	23.840V	23.975V
Active Output Power(W)	23.61W	17.76W	11.87W	5.95W	2.38W	0.00W
Rms Input Voltage(V)	230V	230V	230V	230V	230V	230V
Rms Input Current(A)	0.300A	0.234A	0.161A	0.089A	0.041A	0.015A
Rms Input Power(W)	26.656W	19.972W	13.384W	6.766W	2.857W	0.059W
Power Consumed by UUT(W)	3.045W	2.215W	1.514W	0.815W	0.473W	0.059W
Efficiency	88.577%	88.909%	88.692%	87.951%	83.444%	*
Average Efficiency	88.532%				83.444%	*

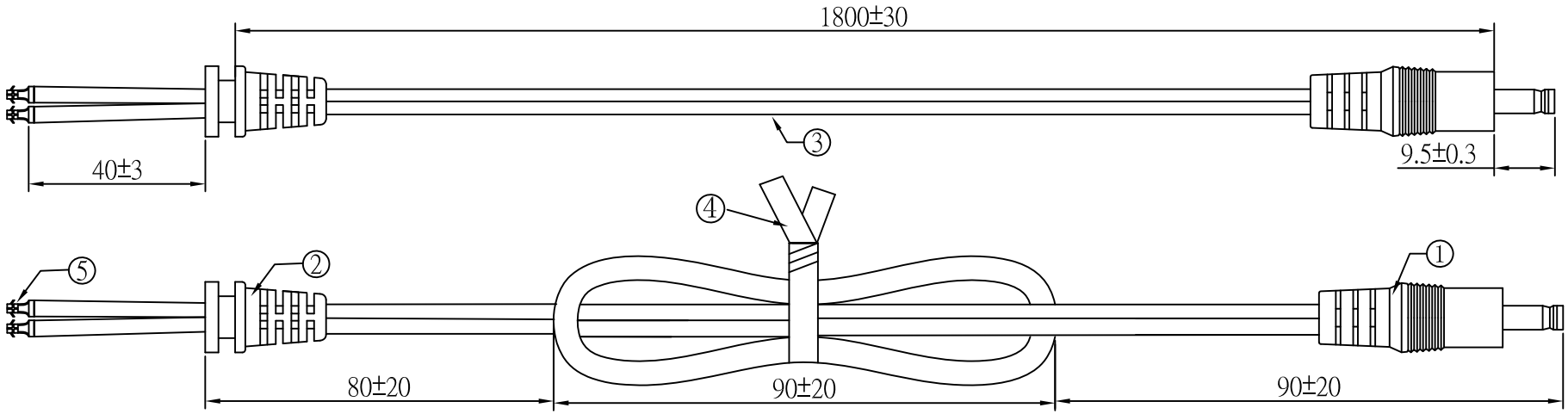
Tester : Wei

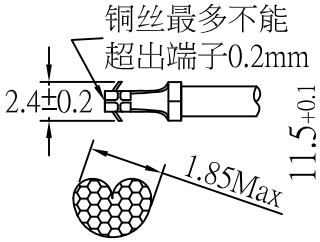
Assembly instruction

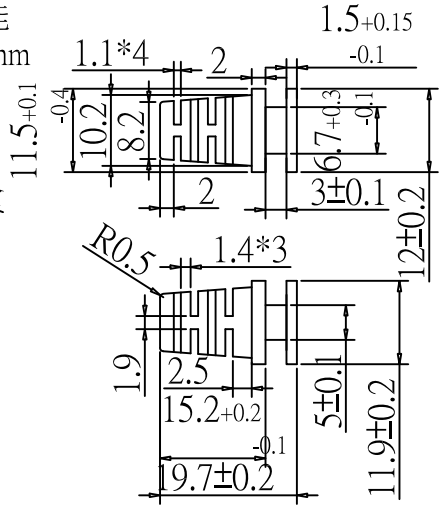


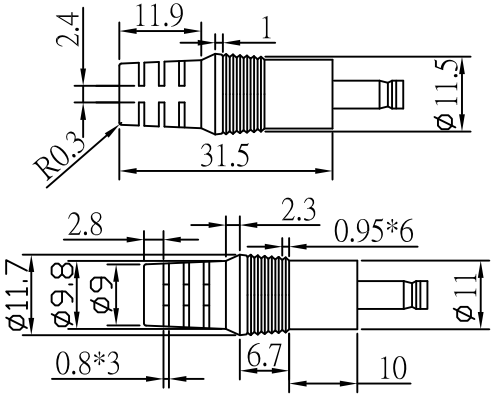


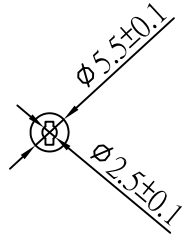


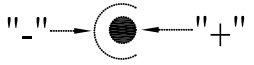












"+"	"-"
條紋	印字

注意:此圖面所需材料符合"ROHS"標準

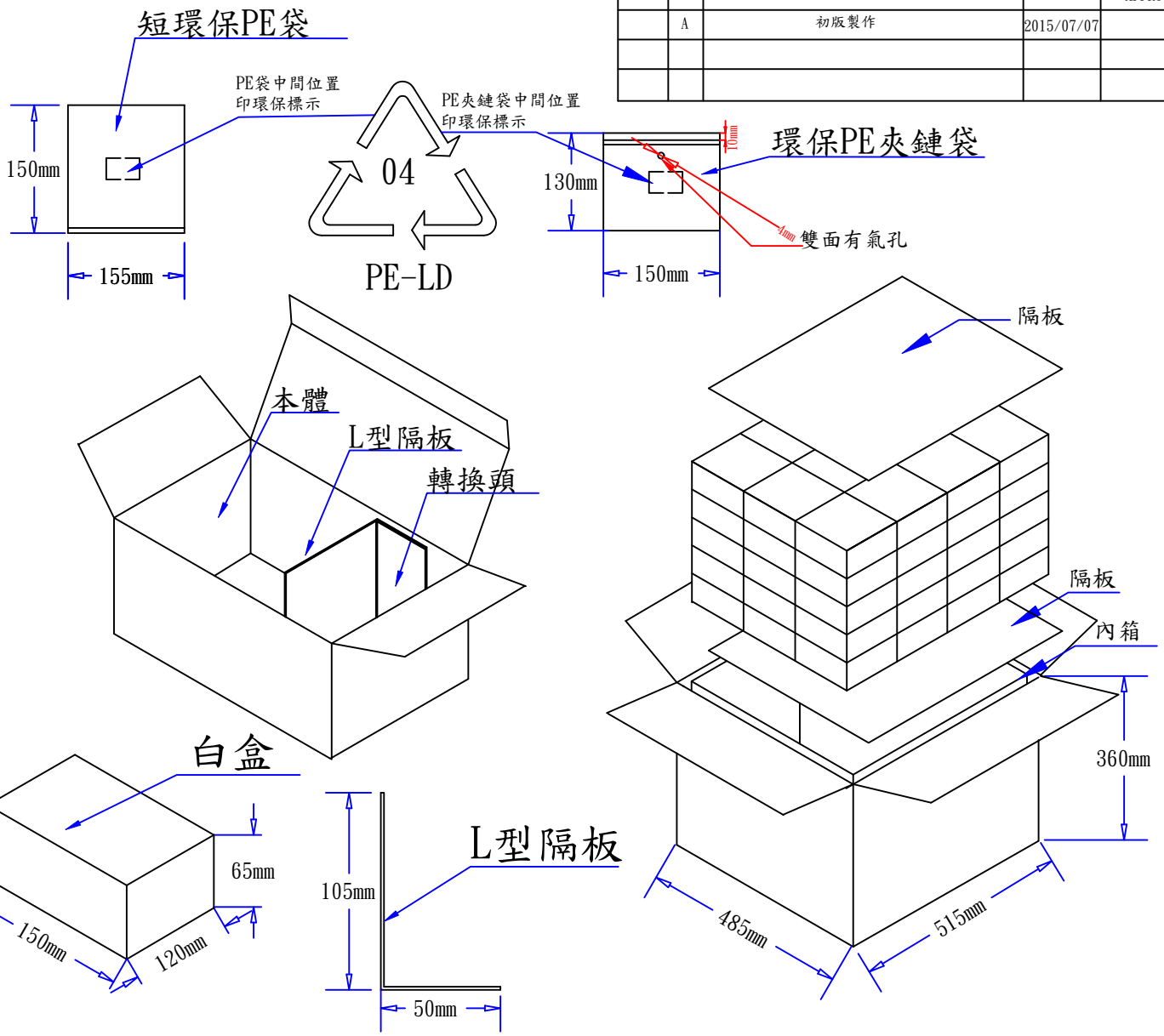
① 5.5*2.5*21音叉車溝黑色半邊 ,外模P-184號模(二次成型),用料外PVC60P黑色
② SR-101號模,用料PVC75P黑色 ,吊重:1米/20磅/60秒
③ UL 2468 22AWG(0.16*17) BK OD:1.8*3.6 裁線長度:1860+10/-0
④ PE无鐵芯紮帶10CM黑色
⑤ 1.8双钩机板端*2PCS(进文提供:P1815-A)
⑥ 單位:MM

一 般 公 差 表			
1.0mm以下	±0.1mm	15.0mm以下	±0.60mm
2.0mm以下	±0.15mm	20.0mm以下	±0.80mm
3.0mm以下	±0.20mm	30.0mm以下	±1.0mm
10.0mm以下	±0.50mm	30.0mm以上	±1.2mm

版次	变更内容	日期
02		
01	新出	2017/10/06

料號	R44L1C1801K		
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-5006	日期	2017/10/06

REVISIONS				
SHOW	REV	DESCRIPTION	DATE	APPROVED
	A	初版製作	2015/07/07	



PIS18W00067 包裝(FOR 18,24,36W可換式)4/5/6包裝-短環保PE袋+環保PE夾鏈袋-白盒-60

9550029401	1. 隔板:488(L)*456(W)*6mm	K=K	2/60	
	2. 數量:4*3*5=60PCS			
9520043801	3. 外箱:515(L)*485(W)*360(H)mm	K=K	1/60	
9520043701	4. 內箱:502(L)*470(W)*342(H)mm(無上下蓋)	K=K	1/60	
9510020001	5. 白盒:150(L)*120(W)*65(H)mm	(350P+CE)	1/1	
9550029501	6. 隔板:105(L)*50(W)*55(H)mm (L型)	(400G雙面白)	1/1 (FOR 白盒內)	
9540008801	7. 短環保PE袋:150(L)*155(W)*0.09mm	無色透明,單端開口,中間印環保標誌	1/1(FOR 本體)	
9580000801	8. 環保PE夾鏈袋:150(L)*130(W)*0.09mm	無色透明,單端開口,中間印環保標誌	1/1(FOR 轉換頭)	

9. DC線擺放在本體旁邊裝入PE袋中,銘板與環保標示同一側,對折袋口后用膠帶封口,
線材朝上放入白盒內,轉換頭用夾鏈袋裝好,放入白盒內,(如上圖所示)方向須統一.
10. 以上所有尺寸為外徑尺寸,所有材料須符合RoSH環保標準.

阿達特科技股份有限公司	DRAWING NO. PIS18W00067			APPROVAL 1 BY		
	UNIT mm	MODEL NO. 18/24/36可換式+4/5/6個轉換頭		APPROVAL 2 BY		
		FILE NO. ADT-0348		CHECKED BY(ENGINEER)		
	SCALE	REV. A	SHEET 1/1	DRAWN BY	黎錦艷	2015/07/07