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**24W**  
AC Adapter  
**SPECIFICATION**

**Model No.** : **ATS024T-W240U (Level VI)**

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**Description** : **24.0 Volts / 1.0 Amps**

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**Part No.** : **ATS024TW240U415211**

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**Version** : **A1**

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**Date** : **02 – Dec. – 2017**

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## 1. Feature :

- ◆ **Input** : **Universal 100 ~ 240 Vac / 50 - 60 Hz Input, without any slide switch.**
- ◆ **Output** : **24V / 0~1A**
- ◆ **Case Dimension** : **72mm(L)\*34mm(W)\*69mm(H) (±1mm)**
- ◆ **Efficiency** : **Eff (av) ≥ 86.204% Min.**
- ◆ **Safety** : **PSE**
- ◆ **EMI** : **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 °C , 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)

$$\text{※Eff (av)} = \frac{E1 + E2 + E3 + E4}{4}$$

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 : PSE

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

(1)	Primary to Secondary	3000Vac for 1 Minute
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c. Insulation Resistance :

(1)	Primary to Secondary	10 M ohm for 500Vdc
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5.2 EMI Requirement : Class B ; Conduction & Radiation Met.

5.3 Leakage Current : Less than 0.25mA

#### 6. Operation and Environment Performance :

##### 6.1 Temperature Range

Operating	+ 0°C ~ + 40°C
Storage	- 20 °C ~ + 80 °C

##### 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°C,By Telcordia SR-332)

## 8. Mechanical :

8.1 Weight : 170 g Typical

8.2 Cable Type : Black UL2468 22AWG  
( Wire + Plug )

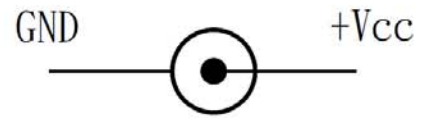
Plug :  $\varnothing 5.5 \times \varnothing 2.1 \times 9.5 \text{mm}$   
( Tuning Fork & Cannelure )

8.3 Cable Length : 1500mm

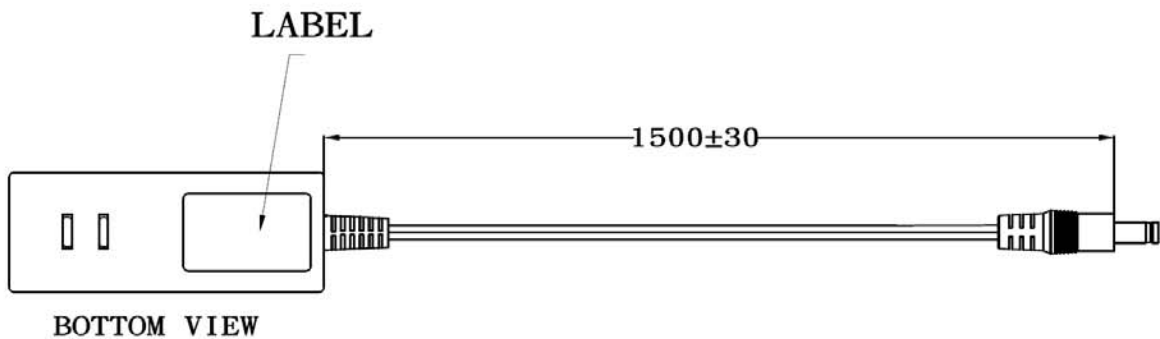
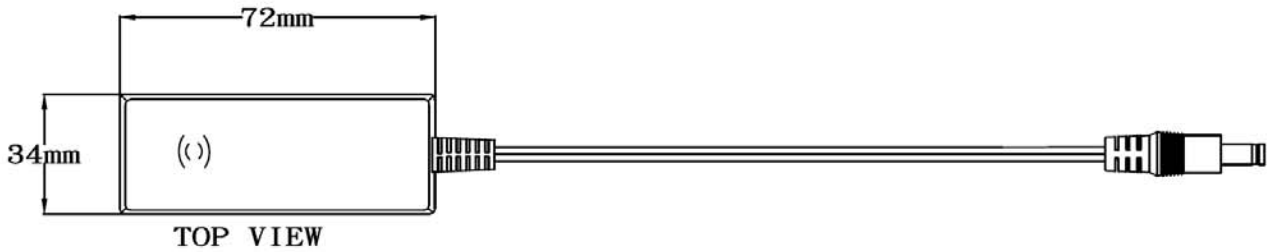
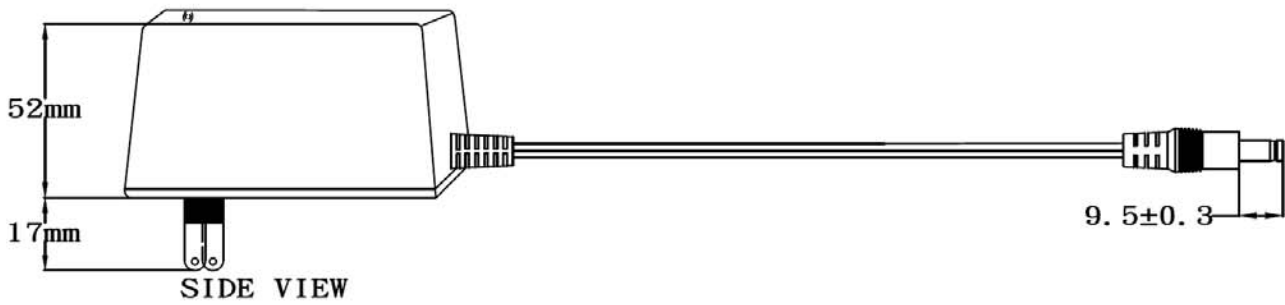
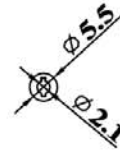
8.4 Case Dimension : 72mm(L)\*34mm(W)\*69mm(H) ( $\pm 1 \text{mm}$ )

8.5 Material Flammability : UL 94V-0

8.6 External Appearance : As drawing below ( Scale  $\rightarrow$  mm )

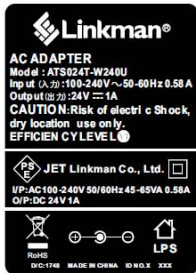


Output Cable Plug Pin Assignment

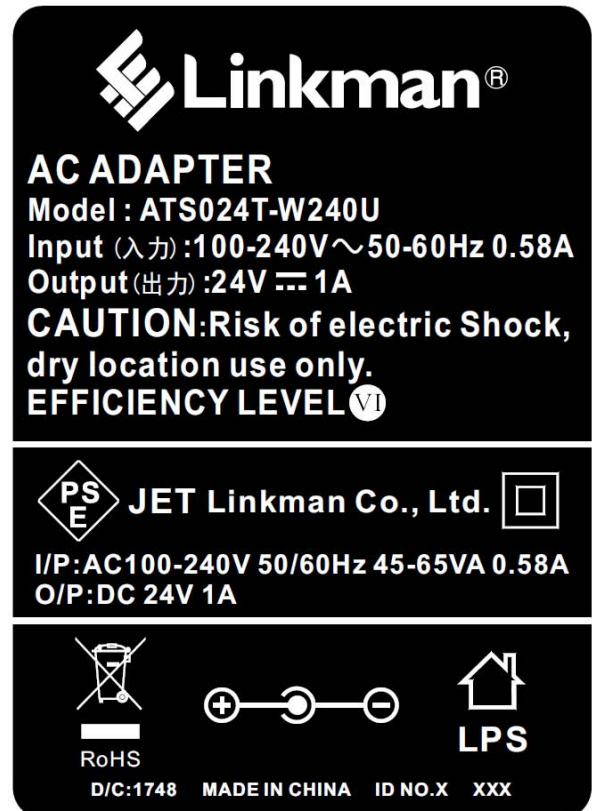


8.7 Spec. Label Materials : Metalized Polyester Label ( Silver Gloss )  
 Color : Black Background with Silver Printing  
 Label Dimension : 34.5mm(L)\*24.5mm(W)+/-0.1mm  
 Label Thickness : #75

100%



300%



"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. :9443084430**

## 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%

$$\text{Eff (av)} = \frac{E1 + E2 + E3 + E4}{4}$$

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

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## 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	$\leq 0.1W$	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 )  $(0.063*\ln(\text{Nameplate Output})+0.622) = 82.22 \%$  Min.
- MEPS V  $(0.0626*\ln(\text{Nameplate Output})+0.622) = 82.09 \%$  Min.
- DOE Level VI  $(0.071*\ln(\text{Pout})-0.0014*\text{Pout}+0.67) = 86.204\%$  Min.
- GEMS VI  $(0.071*\ln(\text{Pout})-0.0014*\text{Pout}+0.67) = 86.204\%$  Min.
- COC Tier 2  $(0.071*\ln(\text{Pno})-0.00115*\text{Pno}+0.67) = 86.804\%$  Min.
- COC Tier 2 (10% Load)  $(0.071*\ln(\text{Pno})-0.0014*\text{Pno}+0.57) = 76.204\%$  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 Equipment :
- 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

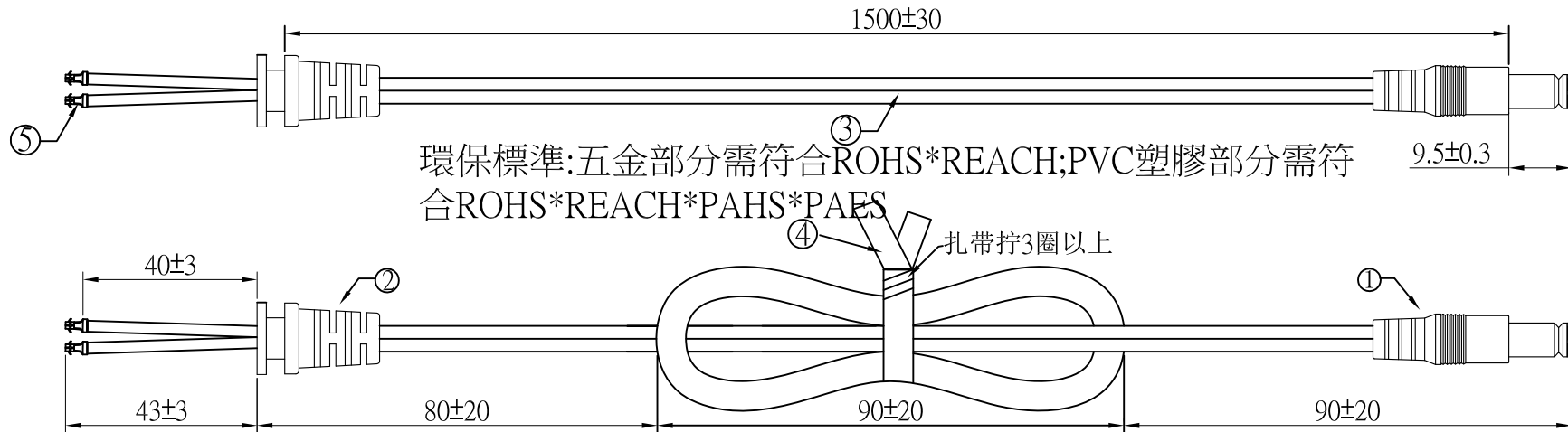
Load Conditions	100% * I <sub>0</sub>	75% * I <sub>0</sub>	50% * I <sub>0</sub>	25% * I <sub>0</sub>	10% * I <sub>0</sub>	0% * I <sub>0</sub>
Reported Quantity						
Rms Output Current(mA)	1000mA	750mA	500mA	250mA	100mA	0mA
Rms Output Voltage(V)	23.616V	23.685V	23.743V	23.805V	23.844V	23.869V
Active 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	100% * I <sub>0</sub>	75% * I <sub>0</sub>	50% * I <sub>0</sub>	25% * I <sub>0</sub>	10% * I <sub>0</sub>	0% * I <sub>0</sub>
Reported Quantity						
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%	*

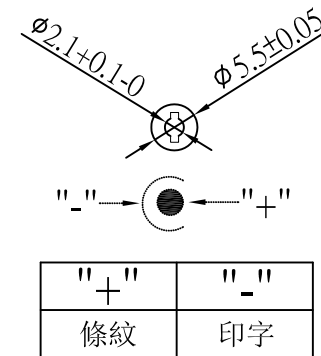
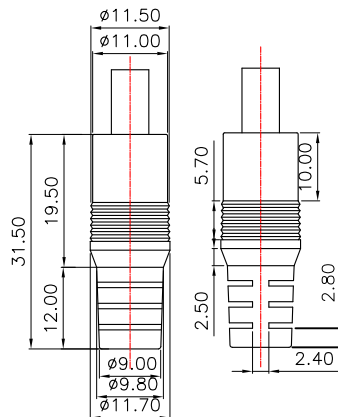
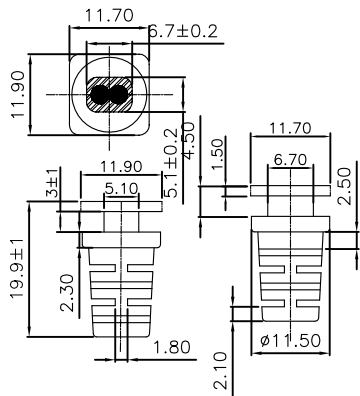
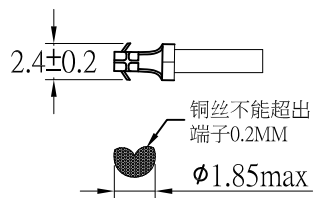
**Tester : Wei**





環保標準:五金部分需符合ROHS\*REACH;PVC塑膠部分需符合ROHS\*REACH\*PAHS\*PAES

扎帶拧3圈以上



①

5.5\*2.1\*21音叉叉沟黑色带尾,外模P-224(泰岳P-184)号模(两次成型),外模用PVC 60P黑色胶粒成型

② SR-122(泰岳SR-101)號模 用PVC 75P黑色膠粒成型 吊重:1米/20磅/60秒

③ UL 2468 22AWG(0.16/BC\*17)\*2C BK OD:1.8\*3.6 裁線長度:1570+10-0

④ PET无鐵芯紮帶12CM黑色

⑤  $\phi 1.8$ 双钩基板端子\*2PCS

絕緣阻抗:20M $\Omega$  導通阻抗:1.5 $\Omega$ MAX

單位:mm

一般模具尺寸公差表	
長度(MM)	公差範圍(MM)
5以下(含)	$\pm 0.2$
10以下(含)	$\pm 0.5$
30以下(含)	$\pm 1$
31以上(含)	$\pm 1.5$

版本	變更內容	變更人	日期
A	初出	吳青喜	2017-06-22

料號				R44M1C1501D3	
客戶		制圖		吳青喜	
廣多版本		頁數		01/01	
客戶版本		審核			
		批准			
圖號		ADT-Q0020		日期	
				2017-06-22	