



Specification for Approval

Customer : **Lomex Ltd.**

Part Name : **AC ADAPTER**

Description : **5.0Volts / 2.0Amps**

Model No. : **ATS012T-W050E (Europe/Level VI)**

Customer P / N : **24-02-39**

Product P / N : **ATS012TW050E415202**

Issued Date : **06 – Apr. – 2020**

Version : **A1**

Issued Stamp :

Customer's Approval Signature

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@adaptech.com.tw ; service@adaptech.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



**10.0W
AC Adapter
SPECIFICATION**

Model No. : **ATS012T-W050E(Europe/Level VI)**

Description : **5.0Volts / 2.0Amps**

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Approved	Reviewed	Checked	Prepared	Sales



■ Approval Documents/Spec. Revised Records

■ Customer : Lomex Ltd.

■ Model No. : ATS012T-W050E

■ Original Documents Content : SPEC. 10 Page(s) , Attachment 2 Pages

Revised Records : No.	Date	Description (Before / After)	Page(s) Revised	Revised By (Adapter/Customer)	Remark
1	Apr./06/2020	ISSUE	-	Jordan	A1



1. Feature :

- ◆ **Input** : Universal 100 ~ 240 Vac / 50 ~ 60 Hz Input, without any slide switch.
- ◆ **Output** : +5.0V / 0~2.0 A
- ◆ **Case Dimension** : 72(L) * 34(W) * 80(H) mm ±1.0mm
- ◆ **Efficiency** : Eff (av) ≥ 78.70%
Eff ≥ 69.73 % (at 230 V / 50 Hz input 10 % load)
- ◆ **Safety** : CB / GS
- ◆ **EMI** : CE Class B ; Conduction & Radiation Meet
- ◆ **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 CEC / DOE(LEVEL VI) / NRCan / Erp(Lot 7) / GEMS(LEVEL VI)

2. Input :

2.1 Voltage	Universal 100~240Vac, single phase
2.2 Frequency	50 ~ 60 Hz
2.3 Current	0.31A Max.
2.4 Inrush Current	60A Max. / 240Vac (Cold Start At 25 °C , Full Load)
2.5 Efficiency	Eff (av) ≥ 78.70% Eff ≥ 69.73 % (at 230 V / 50 Hz input 10 % load)
2.6 Power Consumption	Pi ≤ 0.10 W (At 115 Vac & 230Vac & No Load)

$$\text{※Eff (av)} = \frac{E_1 + E_2 + E_3 + E_4}{4}$$

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	+5.0V ± 5%
	Current	2.0A Max.
	Regulation	4.75Vmin. ~ 5.00Vtyp. ~ 5.25Vmax.
	Ripple & Noise	100 mVpp Max.
	Total Power	10.0W 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. (47μF) at output connector terminals. (At nominal line voltage, Full Load)



4. Protection :

4.1 Over Voltage Protection (OVP)	V out *180%(Max)
4.2 Short Circuit Protection (SCP)	Automatic recovery after short-circuit fault being removed
4.3 Over Current Protection(OCP)	5.0A (Max)(Auto Recovery)

Remark : When Short Circuit Protection or Over Current 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 : CB / GS

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 : CE Class B ; Conduction & Radiation Meet

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 : 165 g Ref.

8.2 Cable Type : Black UL2468 20AWG
(Wire + Plug)

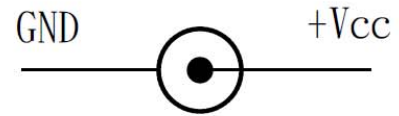
Plug : $\varnothing 5.5 \times \varnothing 2.1 \times 9.5 \text{mm}$
(Tuning Fork & Cannelure)

8.3 Cable Length : 1500mm

8.4 Case Dimension : 72mm(L)*34mm(W)*80mm(H) $\pm 1.0 \text{mm}$

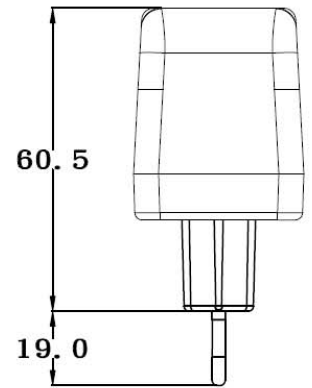
8.5 Material Flammability : UL 94V-0

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

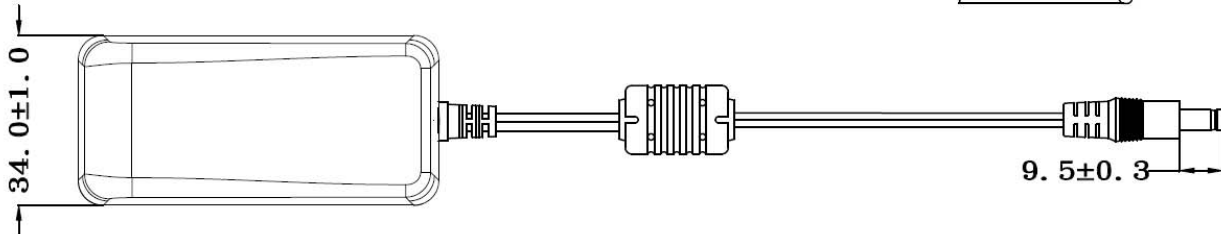


Output Cable Plug Pin Assignment

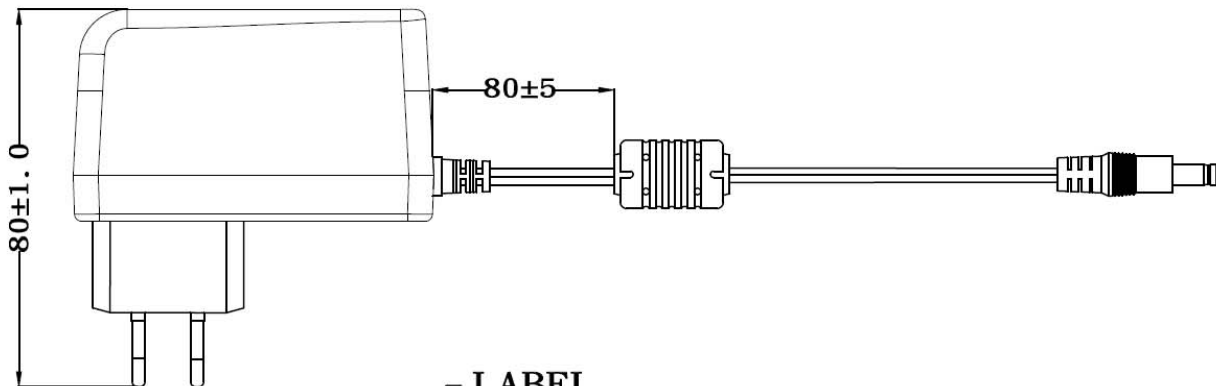
Front-View



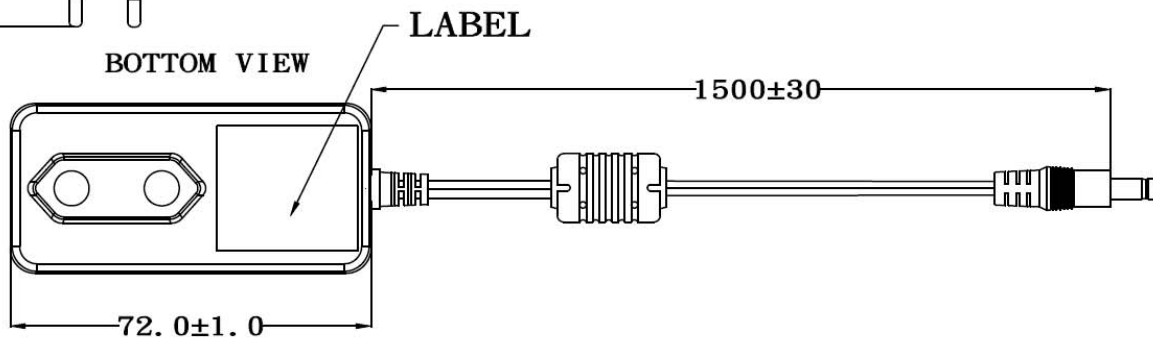
TOP VIEW



SIDE VIEW



BOTTOM VIEW



8.7 Spec. Label Materials : Metalized Polyester Label (Silver Gloss)
 Color : Black Background with Silver Printing
 Label Dimension : 27.5mm(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. :9443110290

A. Line Regulation Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
90Vac / 50 % Load	4.75~5.25 V	5.042 V	5.033 V	5.042 V
115Vac / 50 % Load	4.75~5.25 V	5.042 V	5.033 V	5.042 V
132Vac / 50 % Load	4.75~5.25 V	5.042 V	5.033 V	5.042 V
180Vac / 50 % Load	4.75~5.25 V	5.043 V	5.034 V	5.043 V
230Vac / 50 % Load	4.75~5.25 V	5.043 V	5.034 V	5.043 V
264Vac / 50 % Load	4.75~5.25 V	5.043 V	5.034 V	5.043 V

B. Efficiency Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac	78.70 % Min.	81.18 %	80.41 %	81.18 %
230Vac	78.70 % Min.	79.61 %	79.34 %	79.61 %
230Vac 10% load	69.73 % Min	72.21 %	72.11 %	72.21 %

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

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	4.75~5.25 V	5.170 V	5.160 V	5.170 V
115Vac / 50 % Load	4.75~5.25 V	5.042 V	5.033 V	5.042 V
115Vac / 100 % Load	4.75~5.25 V	4.915 V	4.907 V	4.915 V
230Vac / 0 % Load	4.75~5.25 V	5.171 V	5.161 V	5.171 V
230Vac / 50 % Load	4.75~5.25 V	5.043 V	5.034 V	5.043 V
230Vac / 100 % Load	4.75~5.25 V	4.914 V	4.907 V	4.914 V



D. Ripple & Noise Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	100 mVpp Max.	28.0 mVpp	30.4 mVpp	28.0 mVpp
230Vac / 100 % Load	100 mVpp Max.	20.6 mVpp	31.2 mVpp	20.6 mVpp

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

E. Inrush Current

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
240Vac / 100 % Load	60A Max	47.6 A	47.5 A	47.6 A

F. Over Current Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	5.0A Max.	2.89 A	2.84 A	2.89 A
230Vac / 100 % Load	5.0A Max.	2.57 A	2.60 A	2.57 A

G. Short Circuit Protection

Test Result :

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

H. Input Power Consumption(No Load)

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 0 % Load	≤ 0.10 W	0.029 W	0.028 W	0.029 W
230Vac / 0 % Load	≤ 0.10 W	0.038 W	0.034 W	0.038 W

Efficiency Test Report

A.	Model Number	: ATS012T-W050Z (Z=A,B,C,E,K,U,R)	5.0V	2.00A	10.00W
B.	DC Power Cord	: UL2468 20AWG, 1.5M			
C.	Average Efficiency	:			
	Erp (Lot 7)	$0.0834 \cdot \ln(P_{out}) - 0.0014 \cdot P_{out} + 0.609 =$	78.704%	Min.	
	DoE Level VI	$0.0834 \cdot \ln(P_{out}) - 0.0014 \cdot P_{out} + 0.609 =$	78.704%	Min.	
	GEMS Level VI	$0.0834 \cdot \ln(P_{out}) - 0.0014 \cdot P_{out} + 0.609 =$	78.704%	Min.	
	CoC Tier 2	$0.0834 \cdot \ln(P_{no}) - 0.0011 \cdot P_{no} + 0.609 =$	79.004%	Min.	
	CoC Tier 2 (10% Load)	$0.0834 \cdot \ln(P_{no}) - 0.00127 \cdot P_{no} + 0.518 =$	69.734%	Min.	
D.	NO Load Power Consumption	:			
	Erp (Lot 7)	0.10W Max.			
	DoE Level VI	0.10W Max.			
	GEMS Level VI	0.10W 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			

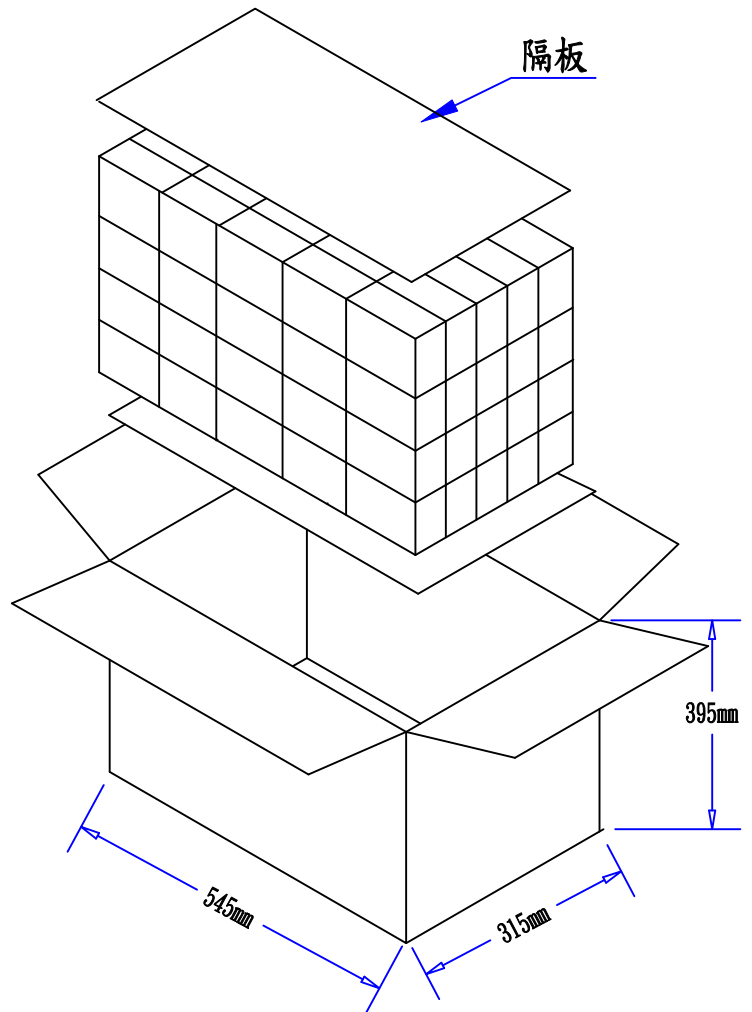
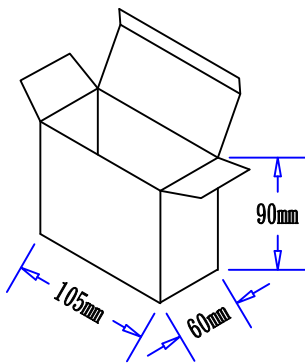
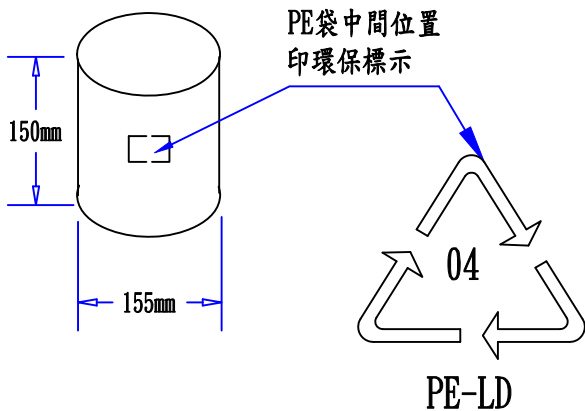
Load Conditions	100% * I ₀	75% * I ₀	50% * I ₀	25% * I ₀	10% * I ₀	0% * I ₀
Reported Quantity						
Rms Output Current(mA)	2000mA	1500mA	1000mA	500mA	200mA	0mA
Rms Output Voltage(V)	4.935V	4.999V	5.063V	5.127V	5.166V	5.191V
Active Output Power(W)	9.87W	7.50W	5.06W	2.56W	1.03W	0.00W
Rms Input Voltage(V)	115V	115V	115V	115V	115V	115V
Rms Input Current(A)	0.206A	0.161A	0.117A	0.070A	0.037A	0.014A
Rms Input Power(W)	12.530W	9.320W	6.259W	3.163W	1.338W	0.031W
True Power Factor (PF)	0.529	0.503	0.465	0.393	0.314	0.019
Total Harmonic Distortion of the input current	149.2A%	164.3A%	188.3A%	227.0A%	269.7A%	106.7A%
Power Consumed by UUT(W)	2.660W	1.822W	1.196W	0.600W	0.305W	0.031W
Active Efficiency	78.771%	80.456%	80.892%	81.046%	77.220%	*
Average Efficiency	80.291%				77.220%	*

G. AC Input Voltage : 230Vac/50Hz

Load Conditions	100% * I ₀	75% * I ₀	50% * I ₀	25% * I ₀	10% * I ₀	0% * I ₀
Reported Quantity						
Rms Output Current(mA)	2000mA	1500mA	1000mA	500mA	200mA	0mA
Rms Output Voltage(V)	4.935V	4.999V	5.064V	5.128V	5.167V	5.192V
Active Output Power(W)	9.87W	7.50W	5.06W	2.56W	1.03W	0.00W
Rms Input Voltage(V)	230V	230V	230V	230V	230V	230V
Rms Input Current(A)	0.141A	0.113A	0.080A	0.047A	0.024A	0.007A
Rms Input Power(W)	12.440W	9.400W	6.404W	3.247W	1.431W	0.039W
True Power Factor (PF)	0.384	0.362	0.348	0.300	0.265	0.024
Total Harmonic Distortion of the input current	226.8A%	240.3A%	250.0A%	270.9A%	210.2A%	14.4A%
Power Consumed by UUT(W)	2.570W	1.902W	1.340W	0.683W	0.398W	0.039W
Active Efficiency	79.341%	79.771%	79.076%	78.965%	72.215%	*
Average Efficiency	79.288%				72.215%	*

Tester : Ian

SHOW	REV	DESCRIPTION	DATE	APPROVED
	A	初版制作	13/08/12	



PIS18W00048 包裝(FOR 18W, 24W插牆式) 短環保PE泡袋厚0.09-白盒-100

9550006001 1. 隔板:530(L)*300(W)*6mm

B=B 2/100

2. 數量:25*4=100PCS

9520006502 3. 外箱:545(L)*315(W)*395(H)mm

K=K 1/100

9510003502 4. 白盒:105(L)*60(W)*90(H)mm 350P+CE(即C9紙加裱350磅白板紙) 1/1

9540008801 5. 環保PE袋:150(L)*155(W)*0.09mm 無色透明,單端開口,中間位置印環保標示. 1/1

6. 成品裝入PE袋后封好,再放入外箱,方向必須統一.

7. 外箱,白盒標注為外徑尺寸

8. 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

DRAWING NO. PIS18W00048			APPROVAL 1 BY		
UNIT	MODEL NO. 18W, 24W(插牆式)		APPROVAL 2 BY		
mm	FILE NO. ADT-0211		CHECKED BY(ENGINEER)		
SCALE	REV. A	SHEET 1/1	DRAWN BY	李金朝	DATE: 2013/08/12

