



Specification for Approval

Customer : **ELFA AB**

Part Name : **AC ADAPTER**

Description : **24Volts / 5Amps**

Model No. : **STD-24050 (LEVEL V)**

Customer P / N : **69-234-83**

Product P / N : **RXTD24050D15211**

Issued Date : **06 - Feb. - 2012**

Version : **A3**

Issued Stamp :

Customer's Approval Signature

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120W
Switching Power Adapter
SPECIFICATION

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Approved	Checked	Prepared



■ Approval Documents/Spec. Revised Records

- Customer : ELFA AB
- Model No. : STD-24050
- Original Documents Content : Spec. 10 Pages, Attachment 2 Pages

Revised Records : No.	Date (mm/dd/yyyy)	Description (Before / After)	Page(s) Revised	Revised By (Adapter/Customer)	Version
1.	Dec./07/2011	ISSUE	-	Ray	A1
2.	Dec./21/2011	Core location changed into 100mm from the plug.	P6,A1	Ray	A2
3.	Feb./06/2012	Update label	P7	Ray	A3



1. Feature :

- ◆ **Input** : Universal 100 ~ 240 Vac / 47 ~ 63 Hz Input, without any slide switch.
- ◆ **Output** : +24V / 0 ~ 5A
- ◆ **Case Dimension** : 168.1(L) * 65.9(W) * 39(H) mm
- ◆ **Efficiency** : Eff (av) $\geq$ 87%
- ◆ **Safety** : CUL / UL / GS / PSE / BSMI / RCM
- ◆ **EMI** : CE / FCC Class B ; Conduction & Radiation Met.
- ◆ **Protection** : OVP (Over Voltage Protection) 、SCP (Short Circuit Protection) 、
OCP (Over Current Protection) 、OTP (Over Temperature Protection)
- ◆ High frequency design , less power consumption.
- ◆ Suitable for usage at Telecommunication, Computer, Industrial Controller, & OA System.
- ◆ Meet Energy Star V / Erp (Stage 2) / MEPS V .

2. Input :

2.1 Voltage	Universal 100 ~ 230Vac, single phase
2.2 Frequency	47 ~ 63 Hz
2.3 Current	1.6A Max.
2.4 Inrush Current	80A Max. / 230Vac (Cold start at 25 °C , full load)
2.5 Efficiency	Eff (av) $\geq$ 87% (At 115 Vac & 230 Vac)
2.6 Power Consumption	Pi $\leq$ 0.5 W (At 230Vac & No load)
2.7 Power Factor (PF)	Pi $\geq$ 0.9 (At Full 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	+24.00V $\pm$ 5%
	Current	5A Max.
	Regulation	22.8Vmin. ~ 24.0Vtyp. ~ 25.2Vmax.
	Ripple & Noise	120mV Max.
	Total Power	120W Max.

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. (10 μ F) at output connector terminals. (At nominal line voltage, full load)



4. Protection :

4.1 Over Voltage Protection (OVP)	V out * (110%~150%)
4.2 Short Circuit Protection (SCP)	Automatic recovery after short-circuit fault being removed
4.3 Over Current Protection(OCP)	I out * (110%~150%)

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 latch.

5. Safety 、EMI and EMC Requirement :

5.1 Safety Requirement

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

b. Dielectric Strength : Cut off current 10mA

(1)	Primary to Secondary	1800Vac 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 / FCC Class B ; Conduction & Radiation Met.

5.3 Leakage Current : Less than 3.5mA

5.4 Grounding Test : Resistance 0.1ohm Max. @ 25A

6. Operation and Environment Performance :

6.1 Temperature Range

Operating	+ 0°C ~ + 50°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. : 50,000 hours min. (at 25°C, by MIL-HDBK-217F)

8. Mechanical :

8.1 Weight : 590g Typical

8.2 Cable Type : Black UL1185 AWG16
(Wire + Plug)

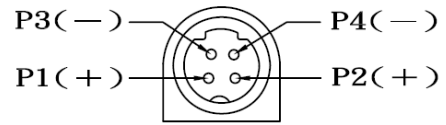
Plug : 4 PIN DING

8.3 Cable Length : 1500mm ADT-2260

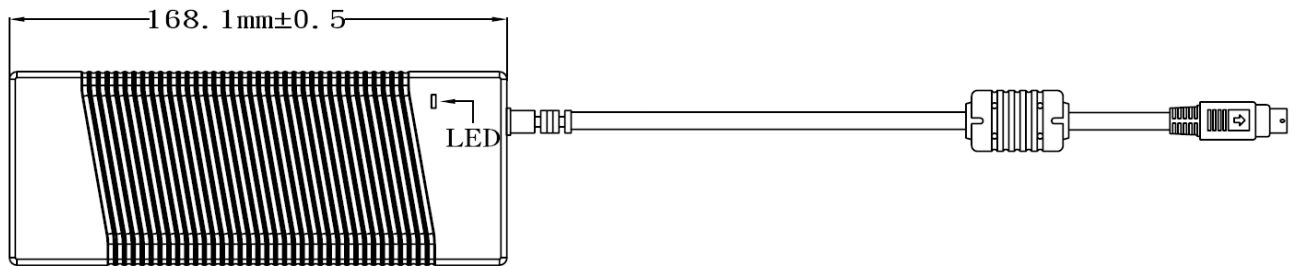
8.4 Case Dimension : 168.1mm(L)*65.9mm(W)*39mm(H)

8.5 Material Flammability : UL 94V-0

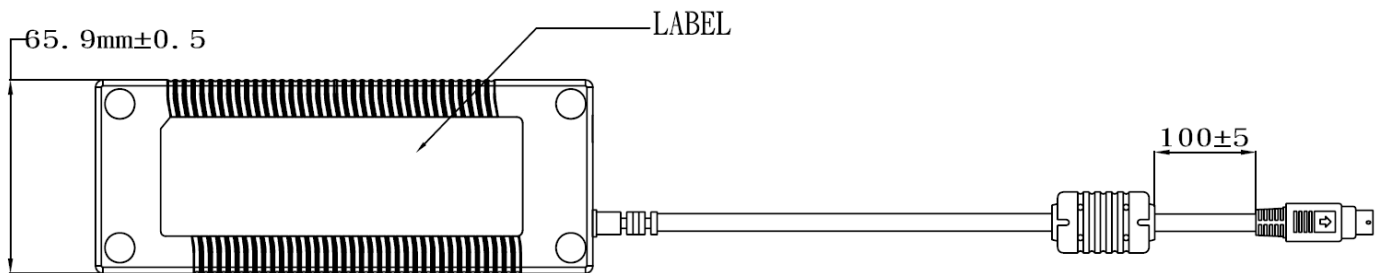
8.6 External Apperance : As drawing below (Scale → mm)



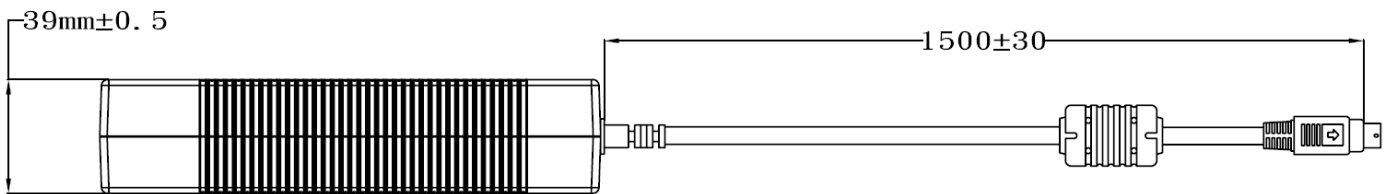
Output Cable Plug Pin Assignment



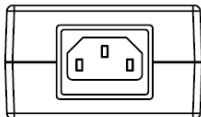
TOP-VIEW



BOTTOM-VIEW



SIDE-VIEW



FRONT VIEW

8.7 Spec. Label Materials : Metalized Polyester Label (Silver Gloss)
 Color : Black Background with Silver Printing
 Label Dimension : 39mm(H)*119mm(W)
 Label Thickness : 0.1mm

100%



"XXX"

Label supplier's code.

It is accurate that the number of words depends on the real finished product.

160%



Label Part No. :9443030721

A. Line Regulation Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
90Vac / 50 % Load	22.8 V ~ 25.2V	24.11V	24.11V	24.03V
115Vac / 50 % Load	22.8 V ~ 25.2V	24.11V	24.11V	24.03V
132Vac / 50 % Load	22.8 V ~ 25.2V	24.11V	24.11V	24.03V
180Vac / 50 % Load	22.8 V ~ 25.2V	24.11V	24.11V	24.04V
230Vac / 50 % Load	22.8 V ~ 25.2V	24.12V	24.11V	24.04V
264Vac / 50 % Load	22.8 V ~ 25.2V	24.12V	24.11V	24.04V

B. Efficiency Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac	87 % Min.	90.26%	89.94%	90.08%
230Vac	87 % Min.	89.24%	89.33%	89.50%

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

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	22.8 V ~ 25.2V	24.32V	24.34V	24.26V
115Vac / 50 % Load	22.8 V ~ 25.2V	24.11V	24.11V	24.03V
115Vac / 100 % Load	22.8 V ~ 25.2V	23.88V	23.89V	23.80V
230Vac / 0 % Load	22.8 V ~ 25.2V	24.33V	24.34V	24.26V
230Vac / 50 % Load	22.8 V ~ 25.2V	24.12V	24.11V	24.04V
230Vac / 100 % Load	22.8 V ~ 25.2V	23.89V	23.89V	23.80V

D. Ripple & Noise Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	120mV Max.	70.8mV	74.8mV	61.4mV
230Vac / 100 % Load	120mV Max.	62.0mV	77.4mV	56.6mV

E. Inrush Current

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
230Vac / 100 % Load	80A Max.	58.6A	57.5A	57.1A

F. Over Voltage Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	Vout*(110%~150%)	115%	116%	116%
230Vac / 100 % Load	Vout*(110%~150%)	115%	116%	115%

G. Over Current Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	Iout*(110%~150%)	124%	123%	124%
230Vac / 100 % Load	Iout*(110%~150%)	122%	122%	125%

H. 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

I. Input Power Consumption(No Load)

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
230Vac / 0 % Load	$\leq 0.5 \text{ W}$	0.314W	0.313W	0.309W

J. Power Factor

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	≥ 0.9	0.994	0.994	0.993
230Vac / 100 % Load	≥ 0.9	0.948	0.947	0.947

Efficiency Test Report

- A. Model Number : STD-24050 (24V / 5A)
- B. DC Power Cord : UL1185 , 16AWG , 1.5M
- C. Average Efficiency :
- Energy Star V 87% min.
- Erp (Stage 2) 87% min.
- MEPS V 87% min.
- D. NO Load Power Consumption :
- Energy Star V 0.5W max.
- Erp (Stage 2) 0.5W max.
- MEPS V 0.5W max.
- E. Testing Dequpiment :
1. AC Power Source : "APE" APW-110N
2. Electronic Load : " PRODIGIT " 3356
3. Power Meter : "YOKOGAWA" WT210
4. 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	0%* I ₀
Rms Output Current(mA)	5000mA	3750mA	2500mA	1250mA	0mA
Rms Output Voltage(V)	23.810V	23.930V	24.040V	24.150V	24.280V
Active Output Power(W)	119.05W	89.74W	60.10W	30.19W	0.00W
Rms Input Voltage(V)	115V	115V	115V	115V	115V
Rms Input Current(A)	1.117A	0.870A	0.059A	0.312A	0.018A
Rms Input Power(W)	133.00W	99.00W	65.80W	33.70W	0.22W
Voltage T.H.D.(%)	0.11	0.10	0.10	0.10	0.08
True Power Factor	0.992	0.990	0.976	0.941	0.101
Power Consumed by UUT(W)	13.95W	9.26W	5.70W	3.51W	0.22W
Efficiency	89.51%	90.64%	91.34%	89.58%	*
Average Efficiency	90.27%				

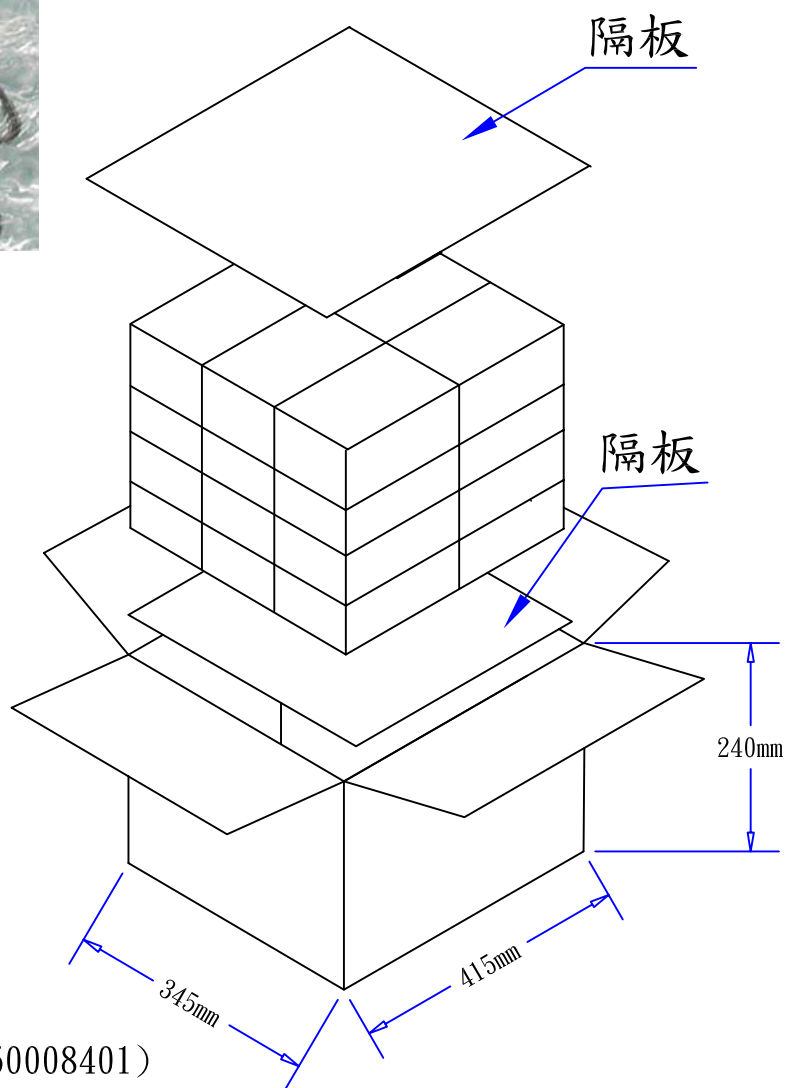
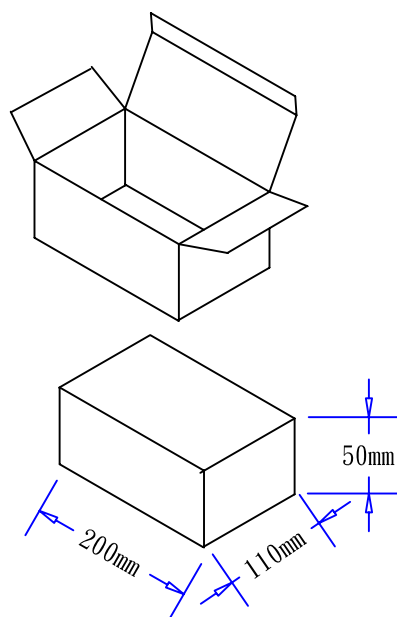
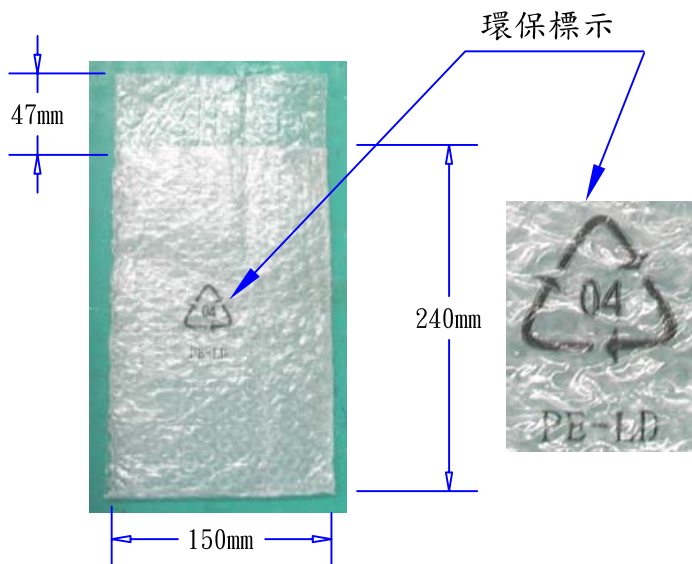
- G. AC Input Voltage : 230Vac/50Hz

Load Conditions Reported Quantity	100%* I ₀	75%* I ₀	50%* I ₀	25%* I ₀	0%* I ₀
Rms Output Current(mA)	5000mA	3750mA	2500mA	1250mA	0mA
Rms Output Voltage(V)	23.820V	23.940V	24.060V	24.170V	24.280V
Active Output Power(W)	119.10W	89.78W	60.15W	30.21W	0.00W
Rms Input Voltage(V)	230V	230V	230V	230V	230V
Rms Input Current(A)	0.603A	0.463A	0.326A	0.186A	0.357A
Rms Input Power(W)	131.60W	98.60W	66.70W	35.00W	0.30W
Voltage T.H.D.(%)	0.11	0.11	0.10	0.11	0.09
True Power Factor	0.949	0.926	0.890	0.819	0.035
Power Consumed by UUT(W)	12.50W	8.82W	6.55W	4.79W	0.30W
Efficiency	90.50%	91.05%	90.18%	86.32%	*
Average Efficiency	89.51%				*

Tester :Ray

PIS120W0002

REVISIONS				
SHOW	REV	DESCRIPTION	DATE	APPROVED
	A	客戶指定紙盒尺寸, 初版制作	09/6/17	



1. 隔板: 400*330*6mm B=B 2/24 (9550008401)
2. 數量: 6*4=24PCS
3. 外箱: L*W*H=415*345*240mm K=K 1/24 (9520010001)
4. E坑瓦楞盒: L*W*H=200*110*50mm; 350P+CE(即C9紙加裱350磅白板紙) (9510004602)
5. 環保汽泡袋: 240*150*47mm 無色透明, 短邊單端開口, 中間位置印環保標誌 (9540003901)
6. 白盒, 外箱標注為外徑尺寸.
7. 成品裝入汽泡袋折合袋口后用小膠紙封口, 下蓋面位於環保標誌側.
8. 成品下蓋向上平裝入白盒內, 方向須統一.

阿達特科技股份有限公司

DRAWING NO. 20-0270-A		APPROVAL2		
UNIT mm	MODEL NO. STD90w機種(阿達特)	APPROVAL1		
	FILE NO. PACKAGE_Y_388	ENGINEER		
SCALE	REV. A	SHEET 1/1	DRAWN BY	