

Specification for Approval

Customer : Linkman Co.,Ltd.

Part Name : AC ADAPTER

Description : 15Volts / 1.6 Amps

Model No. : STD-15016U (USA / LEVEL V)

Customer P / N :

Product P / N : RXTD15016U415201

Issued Date : 18-Jun.-2010

Version : 1.1

Issued Stamp :

Customer's Approval Signature

1. Feature :

- ◆ **Input** : Universal 100 ~ 240 Vac / 47 ~ 63 Hz Input, without any slide switch.
- ◆ **Output** : +15V / 0~1.6 A
- ◆ **Case Dimension** : 72mm(L)*34mm(W)*69mm(H) (±0.5mm)
- ◆ **Efficiency** : Eff (av) ≥ 82.22 % Min.
- ◆ **Safety** : UL / CUL / PSE / BSMI
- ◆ **EMI** : FCC Class B ; Conduction & Radiation
- ◆ **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 Energy Star V / Erp (Stage 2) / MEPS V .

2. Input :

2.1 Voltage	Universal 100~240Vac, single phase
2.2 Frequency	47 ~ 63 Hz
2.3 Current	0.58A Max.
2.4 Inrush Current	30A Max. / 100Vac ; 45A Max. / 230Vac (Cold Start At 25 °C , Full Load)
2.5 Efficiency	Eff (av) ≥ 82.22 % Min. (At 115 Vac & 230 Vac)
2.6 Power Consumption	Pi ≤ 0.3 W (At 115 Vac & 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	+15V ± 5%
	Current	1.6A Max.
	Regulation	14.25Vmin. ~ 15.0Vtyp. ~ 15.75Vmax.
	Ripple & Noise	100 mVpp 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)	18V (MAX)
4.2 Short Circuit Protection (SCP)	Automatic recovery after short-circuit fault being removed
4.3 Over Current Protection(OCP)	3A (MAX)

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 : UL / CUL / PSE / BSMI

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 : FCC Class B ; Conduction & Radiation

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. : 50,000 Hrs.(At 25°C , By MIL-HDBK-217F)

8.Mechanical :

8.1 Weight : 165 g Typical

8.2 Cable Type : Black SPT-1 AWG20

(Wire + Plug)

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

8.3 Cable Length : 1500mm

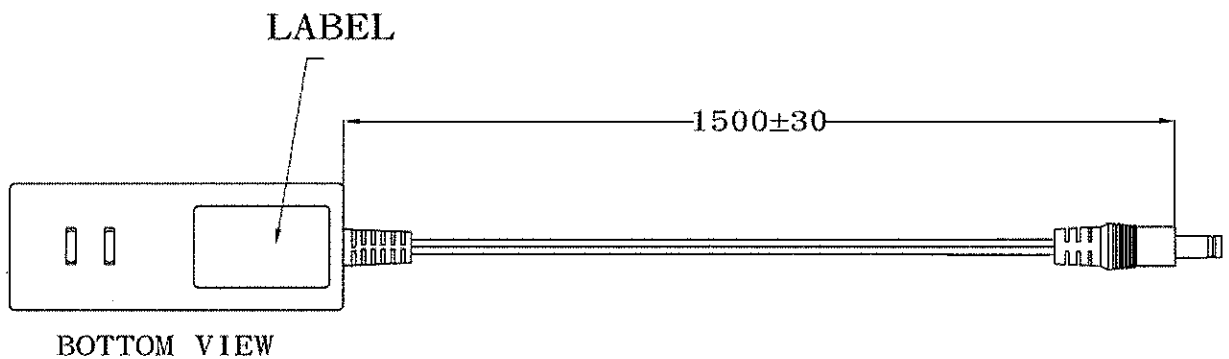
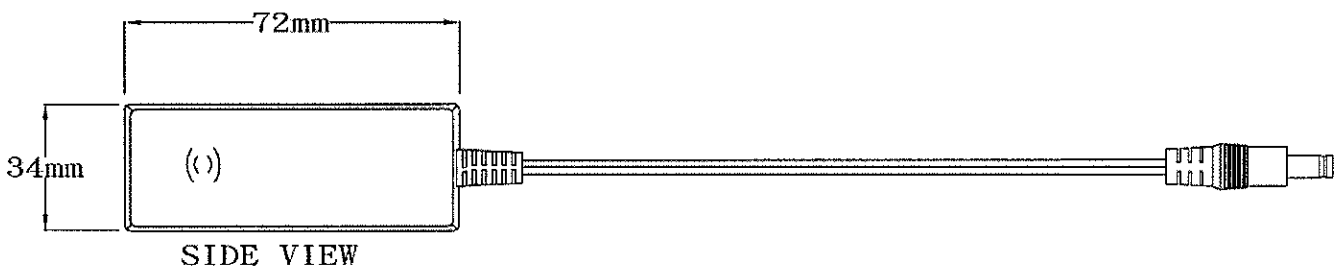
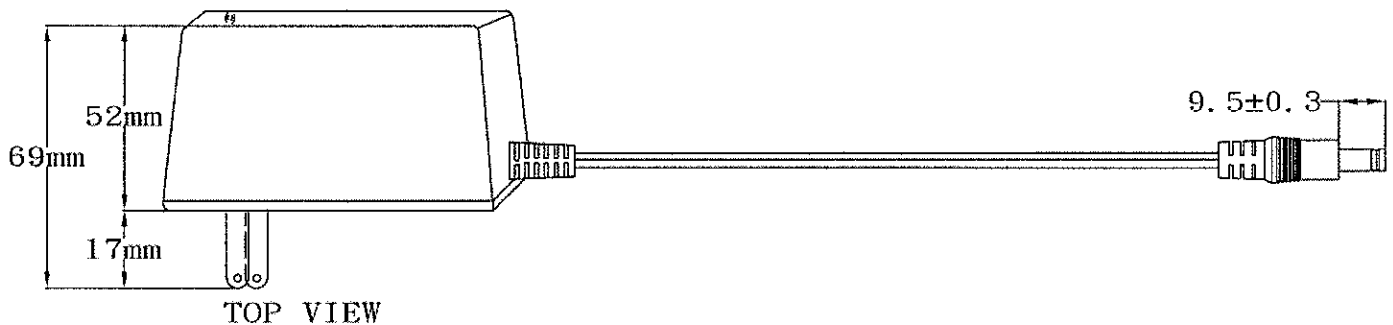
8.4 Case Dimension : 72mm(L)*34mm(W)*69mm(H) ($\pm 0.5 \text{mm}$)

8.5 Material Flammability : UL 94V-0

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



Output Cable Plug Pin Assignment



A. Line Regulation Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
90Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V
115Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V
132Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V
180Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V
230Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V
264Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V

B. Efficiency Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac	82.22 % Min..	83.86 %	83.77 %	83.57 %
230Vac	82.22 % Min..	82.89 %	82.75 %	82.33 %

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

E1=efficiency with 25% rated load ; E2= efficiency with 50% rated load
E3=efficiency with 75% rated load ; E4= efficiency with 100% rated load

C. Load Regulation Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 0 % Load	14.25~15.75V	15.264 V	15.234 V	15.134 V
115Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V
115Vac / 100 % Load	14.25~15.75V	15.009 V	14.989 V	14.951 V
230Vac / 0 % Load	14.25~15.75V	15.264 V	15.234 V	15.134 V
230Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V
230Vac / 100 % Load	14.25~15.75V	15.009 V	14.989 V	14.951 V

D. Ripple & Noise Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	100mVpp Max	56.7mVpp	55.4mVpp	55.1mVpp
230Vac / 100 % Load	100mVpp Max	52.5mVpp	50.8mVpp	51.7mVpp

E. Inrush Current

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	30A Max	28.1A	27.6A	28.3A
230Vac / 100 % Load	45A Max	42.9A	43.5A	42.1A

F. Over Current Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	3A Max.	2.075A	2.158 A	2.101A
230Vac / 100 % Load	3A Max.	2.347 A	2.412 A	2.458A

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
230Vac / 0 % Load	≤ 0.3 W	0.25W	0.26W	0.26W

Efficiency Test Report

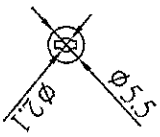
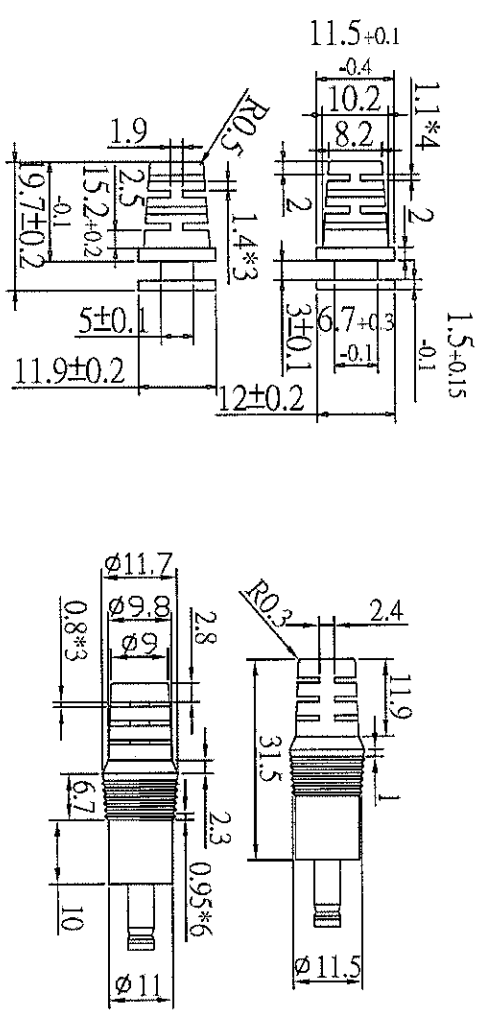
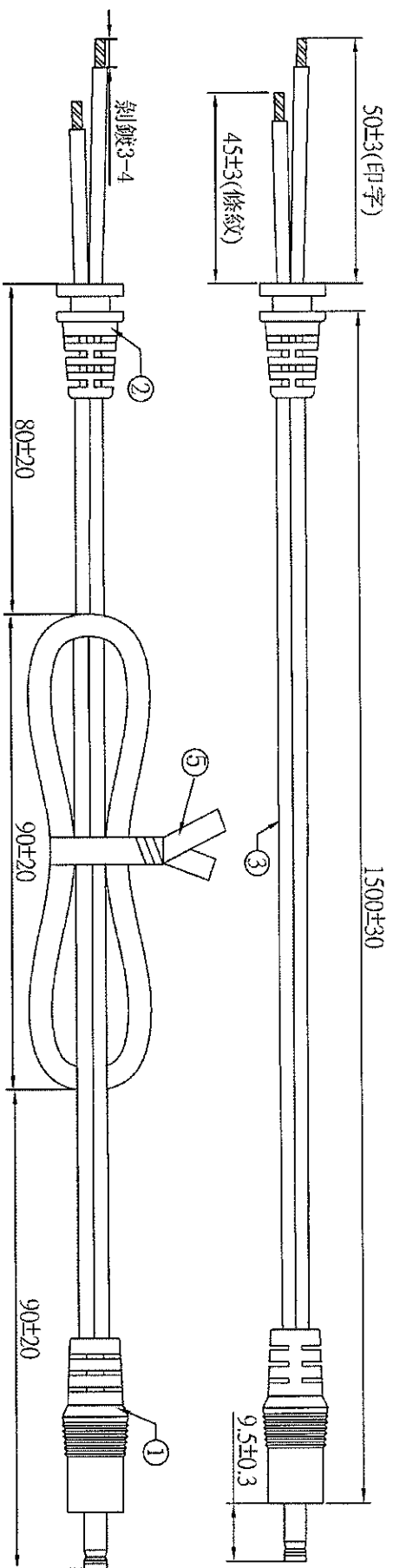
- A. Model Number : STD-15016Z (Z=A,B,C,E,K,T,U,V) (15V / 1.6A / 24W)
- B. DC Power Cord : UL2468 , 20AWG , 1.8M
- C. Average Efficiency :
- Energy Star V (0.0626*Ln(Nameplate Output)+0.622) = 82.09 % Min.
- Erp (Stage 2) (0.063*Ln(Nameplate Output)+0.622) = 82.22 % Min.
- MEPS V (0.0626*Ln(Nameplate Output)+0.622) = 82.09 % Min.
- D. NO Load Power Consumption :
- Energy Star V 0.3W Max.
- Erp (Stage 2) 0.3W Max.
- MEPS V 0.3W Max.
- E. Testing Dequiment :
- a. AC Power Source : " Zentech " 2700M-10
- b. Electronic Load : " PRODIGIT " 3311C
- c. Power Meter : " Zentech " 2100
- 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	0%* I ₀
Rms Output Current(mA)	1600mA	1200mA	800mA	400mA	0mA
Rms Output Voltage(V)	14.982V	15.051V	15.120V	15.189V	15.267V
Active Output Power(W)	23.97W	18.06W	12.10W	6.08W	0.00W
Rms Input Voltage(V)	115V	115V	115V	115V	115V
Rms Input Current(A)	0.460A	0.361A	0.261A	0.152A	0.011A
Rms Input Power(W)	28.86W	21.55W	14.33W	7.22W	0.17W
T.H.D. (Voltage)	0.17	0.15	0.15	0.13	0.1
True Power Factor	0.544	0.518	0.475	0.411	0.132
Power Consumed by UUT(W)	4.89W	3.49W	2.23W	1.14W	0.17W
Efficiency	83.06%	83.81%	84.41%	84.15%	*
Average Efficiency	83.86%				*

- 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)	1600mA	1200mA	800mA	400mA	0mA
Rms Output Voltage(V)	15.009V	15.072V	15.135V	15.197V	15.264V
Active Output Power(W)	24.01W	18.09W	12.11W	6.08W	0.00W
Rms Input Voltage(V)	230V	230V	230V	230V	230V
Rms Input Current(A)	0.315A	0.247A	0.173A	0.096A	0.016A
Rms Input Power(W)	28.70W	21.63W	14.54W	7.52W	0.25W
T.H.D. (Voltage)	0.24	0.2	0.16	0.13	0.1
True Power Factor	0.396	0.380	0.365	0.340	0.066
Power Consumed by UUT(W)	4.69W	3.54W	2.43W	1.44W	0.25W
Efficiency	83.67%	83.62%	83.27%	80.84%	*
Average Efficiency	82.85%				*

Tester : Wei



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條紋	印字

注意:此圖面所需材料符合"ROHS"標準

Fin/18

- ① 5.5*2.1*23 音叉車溝黑色半邊(YY-PD-00186),外模P-184號模(二次成型),用料外PVC60P黑色(YY-PV-00009)
- ② SR-101 號模,用料PVC60P黑色(YY-PV-00009),吊重:1米/20磅/60秒
- ③ UL 2468 20AWG(0.16*26) BK OD:1.9*3.8(YY-DC-00164) 裁線長度:1560+10/-0
- ④ PE有線芯紫帶10CM黑色(YY-ES-00001)
- ⑤ 絕緣阻抗:20Ω,導通阻抗:1.5Ωmax
- ⑥ 單位:MM

料號	R44M1915013		
客戶	阿達特	制圖	劉鋒
版次	02	初審	
頁數	01	審核	
		批准	
圖號	ADT-0949	日期	2009/06/04
版次	02	內容	SR尺寸