

Specification for Approval

Customer : **Linkman Co.,Ltd.**

Part Name : **AC ADAPTER**

Description : **24Volts / 1.0 Amps**

Model No. : **STD-24010U (USA / Level V)**

Customer P / N :

Product P / N : **RXTD24010U415209**

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** : +24V / 0~1 A
- ◆ **Case Dimension** : 72(L) * 34 (W) * 69 (H) mm
- ◆ **Efficiency** : Eff (av) $\geq$ 82.22 % Min.
- ◆ **Safety** : UL / CUL / PSE / BSMI
- ◆ **EMI** : 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 Energy Star V / Eup (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. / 240Vac (Cold Start At 25 °C , Full Load)
2.5 Efficiency	Eff (av) $\geq$ 82.22 % Min. (At 115 Vac & 230 Vac)
2.6 Power Consumption	Pi $\leq$ 0.3 W (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	+24V $\pm$ 5%
	Current	1.0A Max.
	Regulation	22.8Vmin. ~ 24.0Vtyp. ~ 25.2Vmax.
	Ripple & Noise	100 mV Max.
	Total Power	24W 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)	27V (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

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

8. Mechanical :

8.1 Weight : 165 g Typical

8.2 Cable Type : Black UL2468 AWG22
(Wire + Plug)

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

8.3 Cable Length : 1500mm

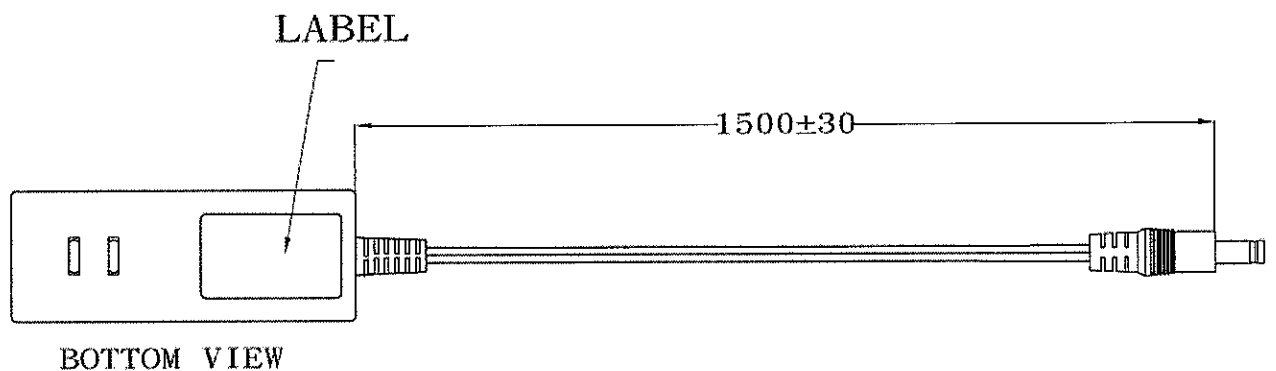
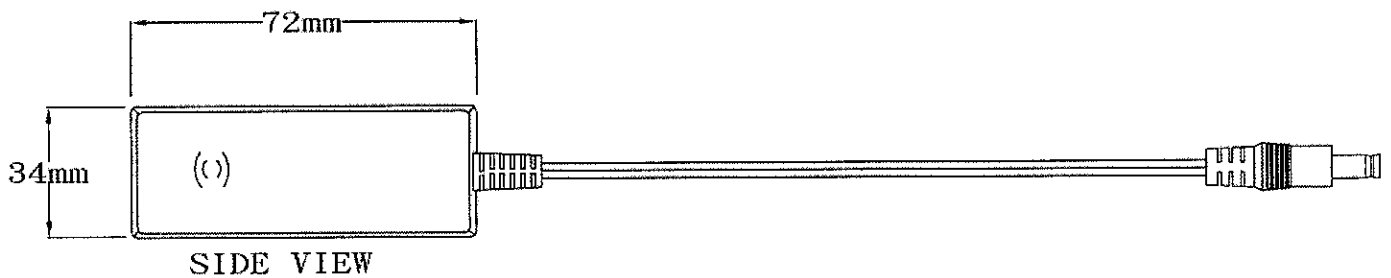
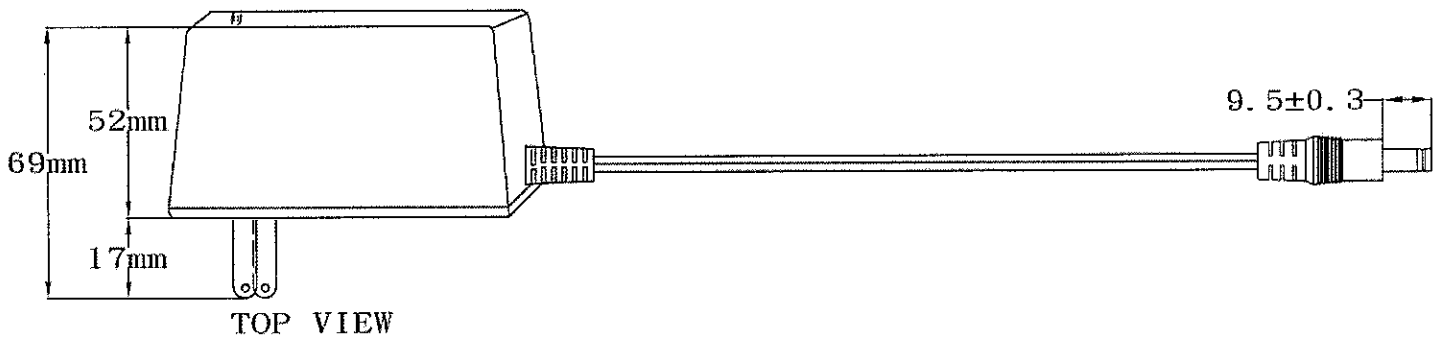
8.4 Case Dimension : 72mm(L)*34mm(W)*69mm(H) ($\pm 0.5 \text{ mm}$)

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	22.8~25.2 V	23.99 V	24.37 V	24.31 V
115Vac / 50 % Load	22.8~25.2 V	23.98 V	24.38 V	24.30 V
132Vac / 50 % Load	22.8~25.2 V	23.99 V	24.37 V	24.30 V
180Vac / 50 % Load	22.8~25.2 V	23.99 V	24.37 V	24.31 V
230Vac / 50 % Load	22.8~25.2 V	23.99 V	24.38 V	24.30 V
264Vac / 50 % Load	22.8~25.2 V	23.98 V	24.38 V	24.30 V

B. Efficiency Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % load	82.22 % Min.	85.69 %	84.88 %	84.98 %
230Vac / 100 % load	82.22 % Min.	84.77 %	84.47 %	84.33 %

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

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	22.8~25.2 V	24.10 V	24.09 V	24.15 V
115Vac / 50 % Load	22.8~25.2 V	23.98 V	24.03 V	24.10 V
115Vac / 100 % Load	22.8~25.2 V	23.90 V	23.97 V	24.07 V
230Vac / 0 % Load	22.8~25.2 V	24.10 V	24.09 V	24.15 V
230Vac / 50 % Load	22.8~25.2 V	23.99 V	24.03 V	24.11 V
230Vac / 100 % Load	22.8~25.2 V	23.91 V	23.96 V	24.07 V

D. Ripple & Noise Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	100mVpp Max	60.4mVpp	58.8mVpp	57.9mVpp
230Vac / 100 % Load	100mVpp Max	52.4mVpp	52.7mVpp	54.5mVpp

E. Inrush Current

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	30A Max.	27.8 A	27.9A	27.5A
230Vac / 100 % Load	45A Max	42.6 A	43.2A	43.3A

F. Over Current Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	2.5A Max.	1.463A	1.476A	1.473A
230Vac / 100 % Load	2.5A Max.	1.556 A	1.576A	1.520A

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	0.28 W	0.28 W	0.29 W

Efficiency Test Report

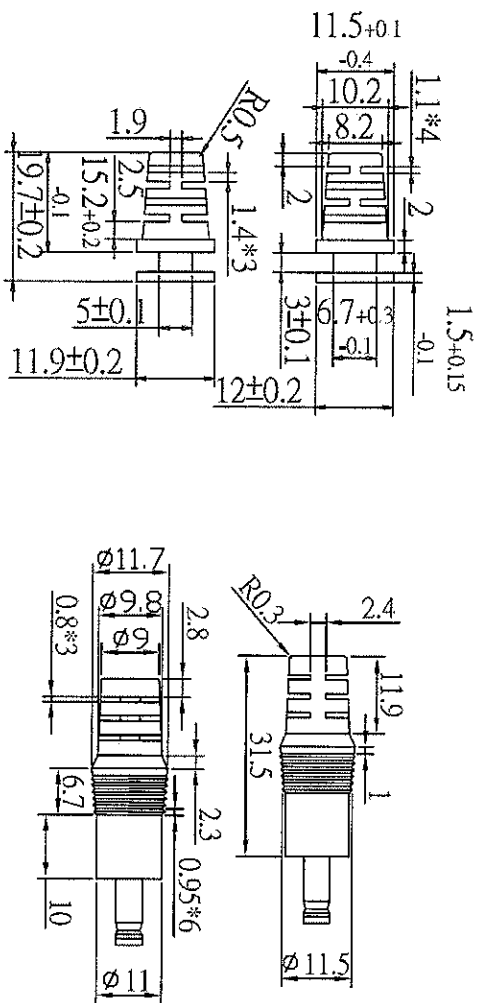
- A. Model Number : STD-24010Z (Z=A,B,C,E,K,T,U,V) (24V / 1A / 24W)
- B. DC Power Cord : UL2468 , 22AWG , 1.8M
- C. Average Efficiency :
- Energy Star V $(0.0626 \cdot \ln(\text{Nameplate Output}) + 0.622) = 82.09 \% \text{ Min.}$
- Eup (Stage 2) $(0.063 \cdot \ln(\text{Nameplate Output}) + 0.622) = 82.22 \% \text{ Min.}$
- MEPS V $(0.0626 \cdot \ln(\text{Nameplate Output}) + 0.622) = 82.09 \% \text{ Min.}$
- D. NO Load Power Consumption :
- Energy Star V 0.3W Max.
- Eup (Stage 2) 0.3W Max.
- MEPS V 0.3W Max.
- E. Testing Dequpment :
- 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)	1000mA	750mA	500mA	250mA	0mA
Rms Output Voltage(V)	23.810V	23.870V	23.930V	23.980V	24.040V
Active Output Power(W)	23.81W	17.90W	11.97W	6.00W	0.00W
Rms Input Voltage(V)	115V	115V	115V	115V	115V
Rms Input Current(A)	0.449A	0.352A	0.255A	0.148A	0.011A
Rms Input Power(W)	28.29W	21.11W	13.99W	7.09W	0.20W
T.H.D. (Voltage)	0.16	0.15	0.15	0.12	0.1
True Power Factor	0.546	0.520	0.475	0.414	0.149
Power Consumed by UUT(W)	4.48W	3.21W	2.03W	1.10W	0.20W
Efficiency	84.16%	84.81%	85.53%	84.56%	*
Average Efficiency	84.76%				*

- 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)	1000mA	750mA	500mA	250mA	0mA
Rms Output Voltage(V)	23.810V	23.860V	23.920V	23.980V	24.040V
Active Output Power(W)	23.81W	17.90W	11.96W	6.00W	0.00W
Rms Input Voltage(V)	230V	230V	230V	230V	230V
Rms Input Current(A)	0.301A	0.236A	0.165A	0.093A	0.016A
Rms Input Power(W)	27.87W	20.95W	14.14W	7.34W	0.27W
T.H.D. (Voltage)	0.23	0.19	0.15	0.12	0.1
True Power Factor	0.401	0.384	0.369	0.324	0.070
Power Consumed by UUT(W)	4.06W	3.06W	2.18W	1.35W	0.27W
Efficiency	85.43%	85.42%	84.58%	81.68%	*
Average Efficiency	84.28%				*

Tester : Wei



T_m 6/28

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圖號	ADT-1328	日期	2009/06/04
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