
Specification for Approval

Customer : **CPC**

Part Name : **AC ADAPTER**

Description : **12Volts / 9Amps**

Model No. : **STD-12090 (RoHS)**

Customer P / N : **SW4274(PW02713)**

Product P / N : **RXTD12090415209**

Issued Date : **16 - Feb. - 2011**

Version : **A2**

Issued Stamp :

Customer's Approval Signature

108W
Switching Power Adapter
SPECIFICATION

Model No. : **STD-12090 (RoHS)**

Description : **12Volts / 9Amps**

Part No. : **RXTD12090415209**

Version : **A2**

Date : **16 - Feb. - 2011**

Approved	Checked	Prepared

1. Feature :

- ◆ **Input** : Universal 100 ~ 240 Vac / 47 ~ 63 Hz Input, without any slide switch.
- ◆ **Output** : +12V / 0 ~ 9A
- ◆ **Case Dimension** : 168.1(L) * 65.9(W) * 39(H) mm
- ◆ **Efficiency** : Eff (av) \geq 87%
- ◆ **Safety** : CUL / UL / GS / PSE / BSMI / CCC / 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 100~240Vac, single phase
2.2 Frequency	47 ~ 63 Hz
2.3 Current	1.6A Max.
2.4 Inrush Current	60A Max. / 240Vac (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 240Vac & 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	+12.00V \pm 5%
	Current	9A Max.
	Regulation	11.4Vmin. ~ 12.0Vtyp. ~ 12.6Vmax.
	Ripple & Noise	120 mV Max.
	Total Power	108W 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 / CCC / 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 : 620g Typical

8.2 Cable Type : Black UL1185 AWG14
(Wire + Plug)

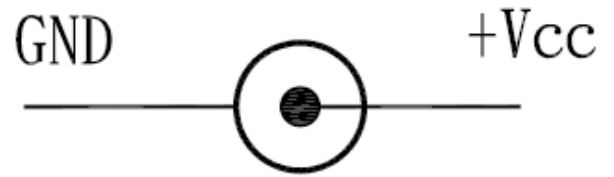
Plug : $\phi 5.5 * \phi 2.1 * 9.5\text{mm}$

8.3 Cable Length : 1500mm

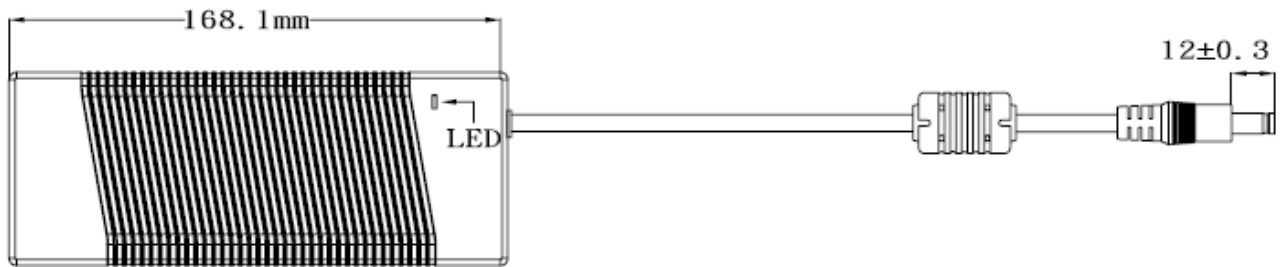
8.4 Case Dimension : 168.1mm(L) * 65.9mm(W) * 39mm(H)

8.5 Material Flammability : UL 94V-0

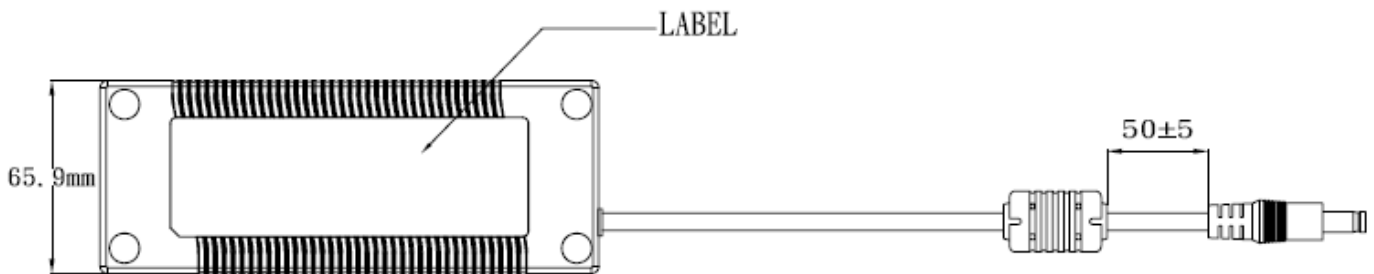
8.6 External Apperance : As drawing below (Scale \rightarrow mm)



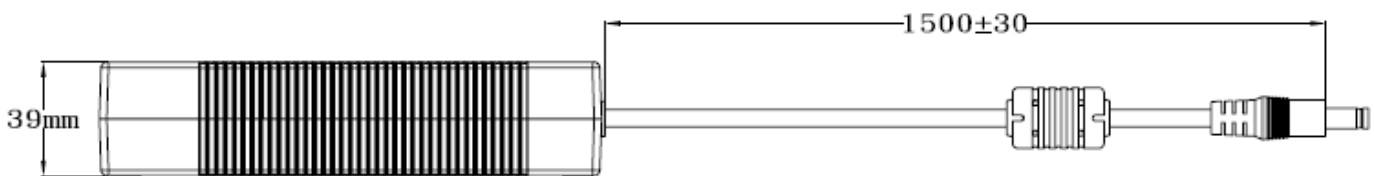
Output Cable Plug Pin Assignment



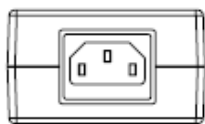
TOP-VIEW



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.

ID NO."X"

Manufacturer's code.
 It is accurate that the number of words depends on the real finished product.

160%



Label Part No. :9443025430

8.8 Spec. Label Materials : Art paper + Gloss
Color : White Background with Black Printing
Label Dimension : 85mm(L)*15mm(W) +/-0.1mm
Label Thickness : 0.1mm

100%

P/N : PW02713

200%

P/N : PW02713

Label Part No. :9443025440

A. Line Regulation Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
90Vac / 50 % Load	11.4 V ~ 12.6 V	12.065V	12.048V	12.068V
115Vac / 50 % Load	11.4 V ~ 12.6 V	12.066V	12.048V	12.071V
132Vac / 50 % Load	11.4 V ~ 12.6 V	12.067V	12.048V	12.072V
180Vac / 50 % Load	11.4 V ~ 12.6 V	12.064V	12.049V	12.065V
230Vac / 50 % Load	11.4 V ~ 12.6 V	12.062V	12.048V	12.072V
264Vac / 50 % Load	11.4 V ~ 12.6 V	12.068V	12.049V	12.073V

B. Efficiency Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac	87 % Min.	88.54%	88.23%	88.48%
230Vac	87 % Min.	88.45%	88.59%	88.29%

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

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	11.4 V ~ 12.6 V	12.298V	12.275V	12.299V
115Vac / 50 % Load	11.4 V ~ 12.6 V	12.069V	12.046V	12.073V
115Vac / 100 % Load	11.4 V ~ 12.6 V	11.847V	11.827V	11.852V
230Vac / 0 % Load	11.4 V ~ 12.6 V	12.299V	12.274V	12.299V
230Vac / 50 % Load	11.4 V ~ 12.6 V	12.070V	12.048V	12.074V
230Vac / 100 % Load	11.4 V ~ 12.6 V	11.848V	11.832V	11.855V

D. Ripple & Noise Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	120mV Max.	100.0mV	96.9mV	105mV
230Vac / 100 % Load	120mV Max.	84.4mV	81.2mV	98.3mV

E. Inrush Current

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
240Vac / 100 % Load	60A Max.	57.1A	57.9A	56.8A

F. Over Voltage Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	Vout*(110%~150%)	118%	115%	117%
230Vac / 100 % Load	Vout*(110%~150%)	118%	116%	117%

G. Over Current Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	Iout*(110%~150%)	120%	119%	118%
230Vac / 100 % Load	Iout*(110%~150%)	121%	119%	119%

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
240Vac / 0 % Load	≤ 0.5 W	0.325W	0.337W	0.300W

J. Power Factor

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	≥ 0.9	0.991	0.993	0.993
230Vac / 100 % Load	≥ 0.9	0.943	0.944	0.939

Efficiency Test Report

- A. **Model Number** : STD-12090 (12V / 9A)
- B. **DC Power Cord** : UL1185 , 14AWG , 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 Dequipment** :
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)	9000mA	6750mA	4500mA	2250mA	0mA
Rms Output Voltage(V)	11.846V	11.959V	12.071V	12.190V	12.313V
Active Output Power(W)	106.61W	80.72W	54.32W	27.43W	0.00W
Rms Input Voltage(V)	115V	115V	115V	115V	115V
Rms Input Current(A)	1.090A	0.811A	0.548A	0.556A	0.016A
Rms Input Power(W)	123.20W	91.50W	60.90W	30.40W	0.20W
Voltage T.H.D.(%)	0.11	0.10	0.10	0.09	0.08
True Power Factor	0.988	0.987	0.972	0.477	0.113
Power Consumed by UUT(W)	16.59W	10.78W	6.58W	2.97W	0.20W
Efficiency	86.54%	88.22%	89.19%	90.22%	*
Average Efficiency	88.54%				*

- 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)	9000mA	6750mA	4500mA	2250mA	0mA
Rms Output Voltage(V)	11.847V	11.960V	12.072V	12.189V	12.311V
Active Output Power(W)	106.62W	80.73W	54.32W	27.43W	0.00W
Rms Input Voltage(V)	230V	230V	230V	230V	230V
Rms Input Current(A)	0.562A	0.431A	0.302A	0.305A	0.030A
Rms Input Power(W)	121.80W	91.30W	61.80W	30.50W	0.30W
Voltage T.H.D.(%)	0.12	0.13	0.12	0.11	0.09
True Power Factor	0.947	0.925	0.894	0.436	0.043
Power Consumed by UUT(W)	15.18W	10.57W	7.48W	3.07W	0.30W
Efficiency	87.54%	88.42%	87.90%	89.92%	*
Average Efficiency	88.45%				*

Tester : Ray