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36W
AC ADAPTER
SPECIFICATION

Model No.	**:**	**ATS036T-P120(Level VI)**
Description	**:**	**12Volts / 3Amps**
Part No.	**:**	
Version	**:**	**01**
Date	**:**	**22–Mar.–2016**

Approved	Reviewed	Checked	Prepared	Sales

1. Feature：

- ♦ **Input** ： **Universal 100 ~ 240 Vac / 50 ~ 60 Hz Input, without any slide switch.**
- ♦ **Output** ： **+12V / 0~3 A**
- ♦ **Case Dimension** ： **100(L) * 50(W) * 33(H) mm**
- ♦ **Efficiency** ： **Eff (av) ≧ 87.40%**
- ♦ **Safety** ： **UL**
- ♦ **EMI** ： **CE / FCC 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 DoE VI / ErP (Stage 2) / GEMS / NRCan / CEC**

2. Input：

2.1 Voltage	**Universal 100~240Vac, single phase**
2.2 Frequency	**50 ~ 60 Hz**
2.3 Current	**1A Max.**
2.4 Inrush Current	**70A Max. / 230Vac (Cold Start At 25 ºC, Full Load)**
2.5 Efficiency	**Eff (av) ≧ 87.40 % (At 115 Vac & 230 Vac)**
2.6 Power Consumption	**Pi ≦ 0.1 W (At 115 Vac & 230 Vac & No Load)**

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

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**	**+12V ± 5%**
	Current	**3A Max.**
	Regulation	**11.40Vmin. ~ 12.00Vtyp. ~ 12.60Vmax.**
	Ripple & Noise	**120 mVpp Max.**
	Total Power	**36W 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. (47 μF) 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)	I out *170%(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

b. Dielectric Strength ： 10mA Max. Cut off current.

(1)	Primary to Secondary	3000Vac for 1 Minute
(2)	Primary to Frame Ground	1500Vac for 1 Minute

c. Insulation Resistance ：

(1)	Primary to Secondary	10 M ohm for 500Vdc
(2)	Primary to Frame Ground	10 M ohm for 500Vdc

5.2 EMI Requirement ： CE / FCC Class B ； Conduction & Radiation Meet

5.3 Leakage Current ： Less than 3.5mA

5.4 Grounding Test ： Resistance 0.1ohm Max. @32A

6. Operation and Environment Performance：

6.1 Temperature Range

Operating	+ 0ºC ~ + 40ºC
Storage	- 20 ºC ~ + 80 ºC

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℃,By Telcordia SR-332)

8. Mechanical :

8.1 Weight : 170 g Typical

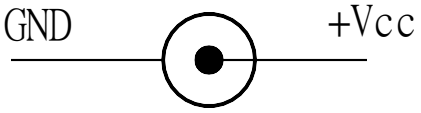
8.2 Cable Type : Black UL2468 18AWG
(Wire + Plug)
Plug : Ø5.5*Ø2.1*9.5mm
(Tuning Fork & Cannelure)

8.3 Cable Length : 1500mm

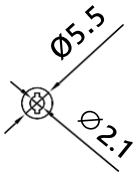
8.4 Case Dimension : 100mm(L)*50mm(W)*33mm(H)

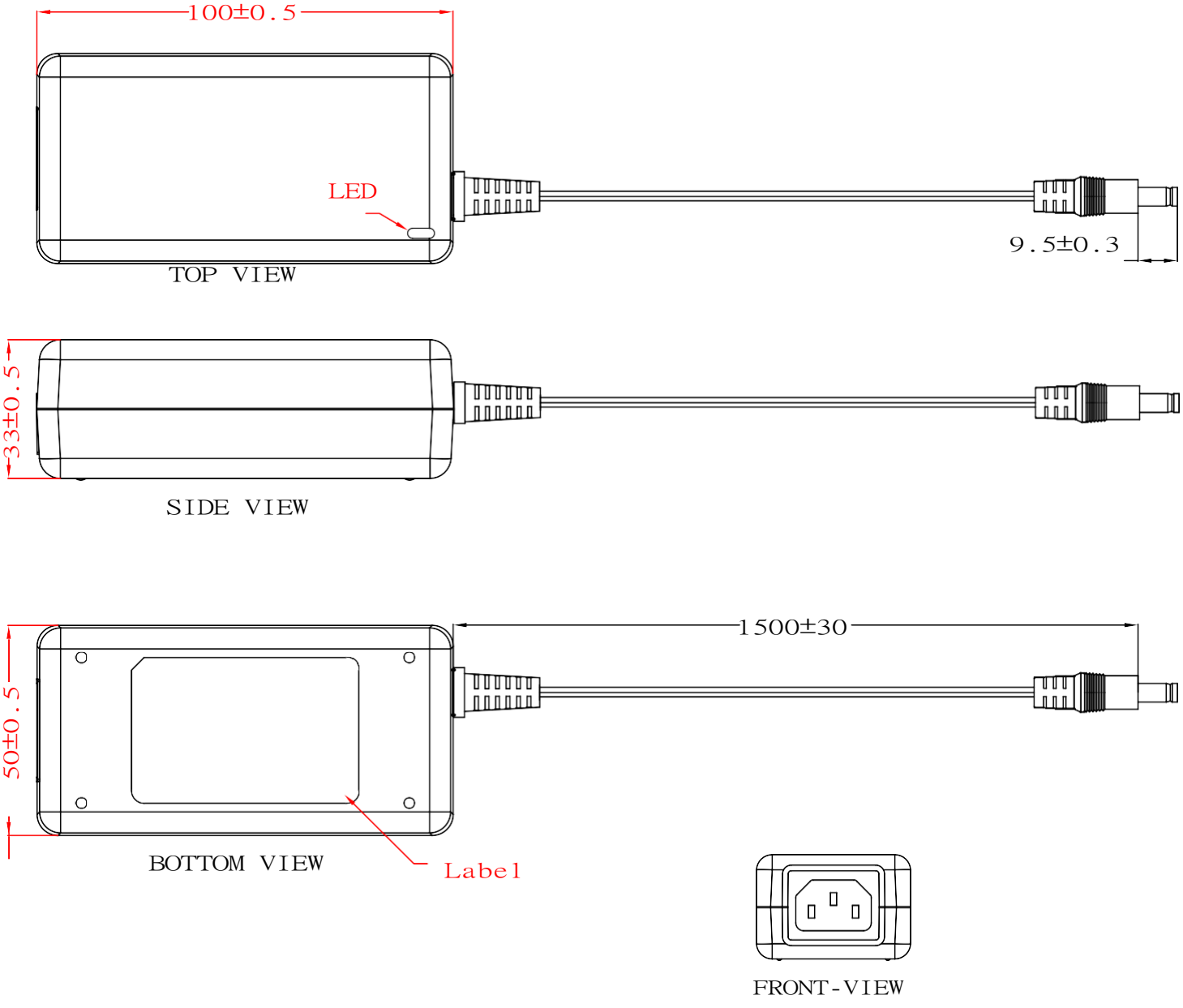
8.5 Material Flammability : UL 94V-0

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	11.4 V ~ 12.6 V	12.03 V	12.01 V	12.02 V
115Vac / 50 % Load	11.4 V ~ 12.6 V	12.03 V	12.01 V	12.02 V
132Vac / 50 % Load	11.4 V ~ 12.6 V	12.03 V	12.01 V	12.02 V
180Vac / 50 % Load	11.4 V ~ 12.6 V	12.03 V	12.01 V	12.02 V
230Vac / 50 % Load	11.4 V ~ 12.6 V	12.03 V	12.01 V	12.02 V
264Vac / 50 % Load	11.4 V ~ 12.6 V	12.03 V	12.01 V	12.02 V

B. Efficiency Test

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 60Hz	87.40 % Min.	88.12 %	88.10 %	88.10 %
230Vac / 50Hz	87.40 % Min.	87.96 %	88.10 %	88.00 %

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

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	12.16 V	12.14 V	12.15 V
115Vac / 50 % Load	11.4 V ~ 12.6 V	12.03 V	12.01 V	12.02 V
115Vac / 100 % Load	11.4 V ~ 12.6 V	11.91 V	11.87 V	11.89 V
230Vac / 0 % Load	11.4 V ~ 12.6 V	12.16 V	12.14 V	12.15 V
230Vac / 50 % Load	11.4 V ~ 12.6 V	12.03 V	12.01 V	12.02 V
230Vac / 100 % Load	11.4 V ~ 12.6 V	11.90 V	11.87 V	11.89 V

D. Ripple & Noise Test

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	120 mVpp Max.	71.9 mV	77.2 mV	80.8 mV
230Vac / 100 % Load	120 mVpp Max.	71.2 mV	76.7 mV	70.9 mV

E. Inrush Current

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
240Vac / 100 % Load	70A Max	61.4 A	53.6 A	55.0 A

F. Output Current Protection

Test Result Test Tesult

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac	Iout*170%(Max)	142 %	141 %	140 %
230Vac	Iout*170%(Max)	137 %	137 %	135 %

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

Test Result ：

Test condition	Spec.	Reading 1	Reading 2	Reading 3
230Vac / 0 % Load	≤ 0.1W	0.07 W	0.07 W	0.07 W

Efficiency Test Report

A. **Model Number** : **ATS036T-P120 (12V / 3A)**

B. **DC Power Cord** : **UL2468 , 18AWG , 1500mm**

C. **Average Efficiency** :

Energy Star VI **(0.071*ln(Pout)-0.0014*Pout+0.67) = 87.40 % 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 VI **0.1W Max.**

Erp (Stage 2) **0.3W Max.**

MEPS V **0.3W Max.**

E. **Testing Dequipment** :

a. AC Power Source : **" Zentech "** **2700M-10**

b. Electronic Load : **" PRODIGIT "** **3311D**

c. Power Meter : **" YOKOGAWA "** **WT210**

d. Digital Meter : **" APPA "** **99III**

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)	3000mA	2250mA	1500mA	750mA	0mA
Rms Output Voltage(V)	11.90V	11.96V	12.03V	12.09V	12.16V
Active Output Power(W)	35.70W	26.91W	18.05W	9.07W	0.00W
Rms Input Voltage(V)	115V	115V	115V	115V	115V
Rms Input Current(A)	0.703A	0.559A	0.417A	0.230A	0.014A
Rms Input Power(W)	40.96W	30.60W	20.35W	10.23W	0.05W
T.H.D. (Voltage)	0.64	0.55	0.49	0.32	0.13
True Power Factor	0.506	0.475	0.423	0.386	0.041
Power Consumed by UUT(W)	5.26W	3.69W	2.31W	1.16W	0.05W
Efficiency	87.16%	87.94%	88.67%	88.63%	*
Average Efficiency	88.10%				*

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)	3000mA	2250mA	1500mA	750mA	0mA
Rms Output Voltage(V)	11.88V	11.95V	12.02V	12.09V	12.16V
Active Output Power(W)	35.64W	26.89W	18.03W	9.07W	0.00W
Rms Input Voltage(V)	230V	230V	230V	230V	230V
Rms Input Current(A)	0.409A	0.315A	0.219A	0.120A	0.022A
Rms Input Power(W)	40.57W	30.51W	20.46W	10.31W	0.07W
T.H.D. (Voltage)	0.7	0.57	0.43	0.28	0.11
True Power Factor	0.431	0.421	0.406	0.373	0.018
Power Consumed by UUT(W)	4.93W	3.62W	2.43W	1.25W	0.07W
Efficiency	87.85%	88.13%	88.12%	87.91%	*
Average Efficiency	88.00%				*

Tester : *Jarvis*

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