

120W
Switching Power Adapter
SPECIFICATION

Description : 48Volts / 2.5Amps

Part No. : AD-AT48025

Version : 02

Date : 20 - July - 2010

1. Feature :

- ◆ **Input** : Universal 100 ~ 240 Vac / 47 ~ 63 Hz Input, without any slide switch.
- ◆ **Output** : +48V / 0 ~ 2.5A
- ◆ **Case Dimension** : 168.1(L) * 65.9(W) * 39(H) mm
- ◆ **Efficiency** : Eff (av) \geq 87%
- ◆ **Safety** : CUL / UL / GS / 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)

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

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	+48.00V \pm 5%
	Current	2.5A Max.
	Regulation	45.6Vmin. ~ 48.0Vtyp. ~ 50.4Vmax.
	Ripple & Noise	300 mV 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 * (105% ~ 150%)
4.2 Short Circuit Protection (SCP)	Automatic recovery after short-circuit fault being removed
4.3 Over Current Protection(OCP)	I out * (105% ~ 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 / BSMI / CCC / RCM

b. Dielectric Strength : Cut off current 10mA

(1)	Primary to Secondary	1800Vac for 1 Minute
-----	----------------------	----------------------

c. Insulation Resistance :

(1)	Primary to Secondary	10 M ohm for 500Vdc
-----	----------------------	---------------------

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 ~ + 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 hours min. (at 25°C, by MIL-HDBK-217F)

8. Mechanical :

8.1 Weight : 570g Typical

8.2 Cable Type : Black UL1185 AWG18
 (Wire + Plug)

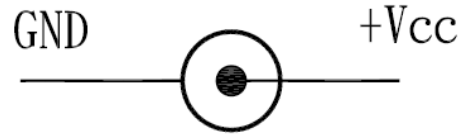
Plug : $\phi 5.5 * \phi 2.5 * 9.5\text{mm}$

8.3 Cable Length : 1500mm

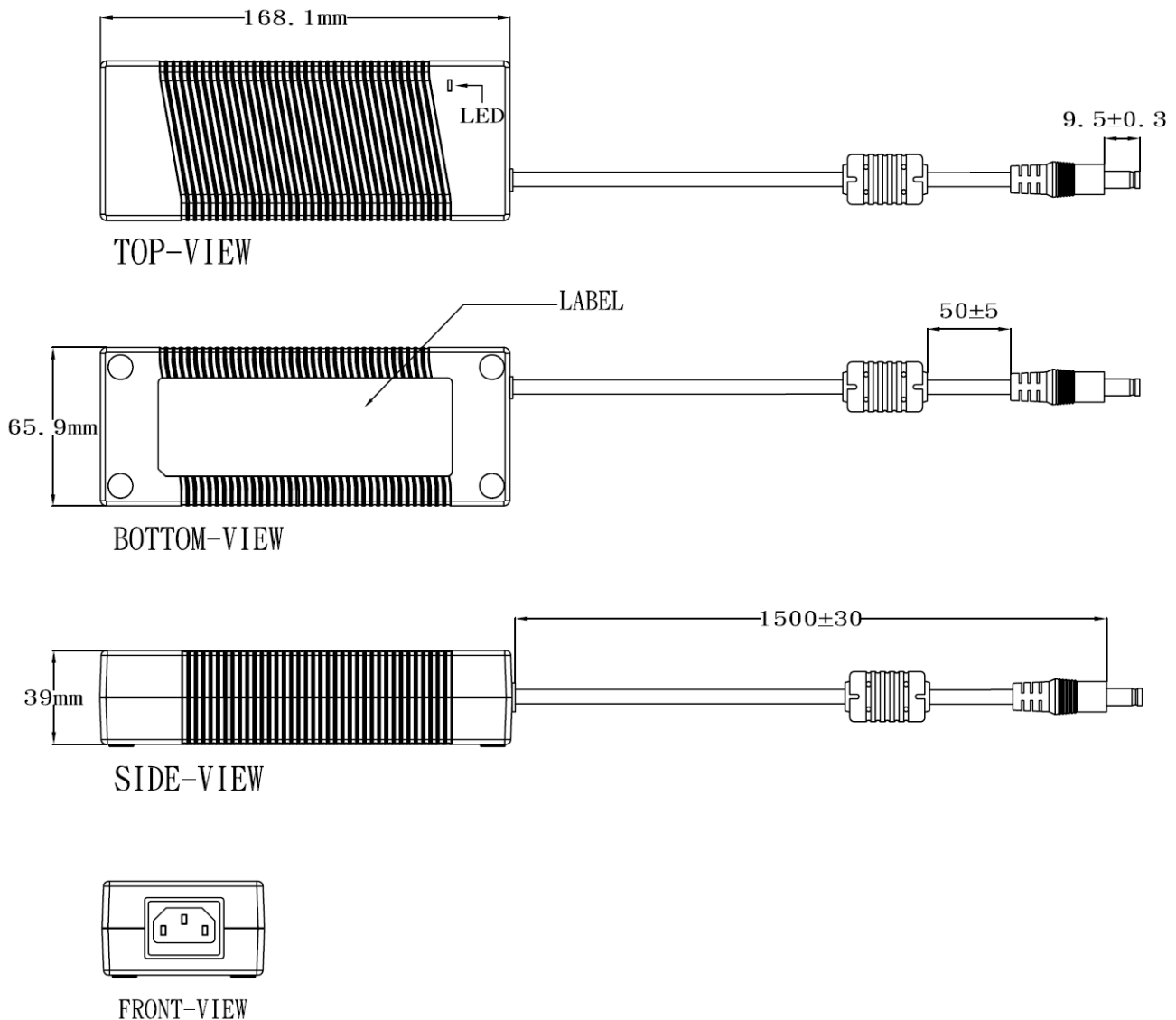
8.4 Case Dimension : 168.1mm(L) * 65.9mm(W) * 39mm(H)

8.5 Material Flammability : UL 94V-0

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



Output Cable Plug Pin Assignment



A. Line Regulation Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
90Vac / 50 % Load	45.6 V ~ 50.4 V	48.51V	48.24V	48.30V
115Vac / 50 % Load	45.6 V ~ 50.4 V	48.51V	48.24V	48.30V
132Vac / 50 % Load	45.6 V ~ 50.4 V	48.51V	48.24V	48.29V
180Vac / 50 % Load	45.6 V ~ 50.4 V	48.35V	48.09V	48.14V
230Vac / 50 % Load	45.6 V ~ 50.4 V	48.35V	48.09V	48.14V
264Vac / 50 % Load	45.6 V ~ 50.4 V	48.35V	48.09V	48.14V

B. Efficiency Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac	87 % Min.	89.82%	90.16%	90.04%
230Vac	87 % Min.	88.89%	89.36%	89.12%

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

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	45.6 V ~ 50.4 V	48.84V	48.50V	48.59V
115Vac / 50 % Load	45.6 V ~ 50.4 V	48.51V	48.24V	48.30V
115Vac / 100 % Load	45.6 V ~ 50.4 V	48.31V	48.07V	48.08V
230Vac / 0 % Load	45.6 V ~ 50.4 V	48.84V	48.50V	48.59V
230Vac / 50 % Load	45.6 V ~ 50.4 V	48.35V	48.09V	48.13V
230Vac / 100 % Load	45.6 V ~ 50.4 V	48.23V	47.97V	47.98V

D. Ripple & Noise Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	300mV Max.	156mV	151mV	134mV
230Vac / 100 % Load	300mV Max.	131mV	127mV	117mV

E. Inrush Current

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
230Vac / 100 % Load	60A Max.	58.2A	57.5A	57.8A

F. Over Voltage Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	Vout*(105%~150%)	115%	119%	116%
230Vac / 100 % Load	Vout*(105%~150%)	116%	119%	116%

G. Over Current Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	Iout*(105%~150%)	121%	122%	119%
230Vac / 100 % Load	Iout*(105%~150%)	132%	134%	130%

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	0.398W	0.398W	0.400W

J. Power Factor

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	≥ 0.9	0.991	0.991	0.990
230Vac / 100 % Load	≥ 0.9	0.952	0.949	0.948

Efficiency Test Report

A.	Model Number	AD-AT48025 (48V/2.5A)	
B.	DC Power Cord	UL1185, 18AWG, 1.5M	
C.	Average Efficiency		
	Energy Star V	87% min.	
	Erp (Stage 2)	87% min.	
	MEPS V	87% min.	
D.	0 Load Power Consumption		
	Energy Star V	0.5W max.	
	Erp (Stage 2)	0.5W max.	
	MEPS V	0.5W max.	
E.	Testing Equipment		
	1.AC Power Source	"APE"	APW-110N
	2. Electronic Load	"PRODIGIT"	3356
	3. Power Analyzer	"YOKOGAWA"	W 210
	4. Digital Meter	"FLUKE"	45
F.	AC Input Voltage	115Vac/60Hz	

Reported Quantity \ Load Conditions	100%* I ₀	75%* I ₀	50%* I ₀	25%* I ₀	0%* I ₀
Rms Output Current (mA)	2500mA	1875mA	1250mA	625mA	0mA
Rms Output Voltage(V)	48.310V	48.410V	48.510V	48.550V	48.840V
Active Output Power(W)	120.78W	90.77W	60.64W	30.34W	0.00W
Rms Input Voltage(V)	115V	115V	115V	115V	115V
Rms Input Current (A)	1.180A	0.884A	0.601A	0.319A	0.018A
Rms Input Power(W)	134.20W	99.80W	67.10W	34.50W	0.01W
Voltage T.H.D. (%)	0.13	0.12	0.12	0.11	0.11
True Power Factor	0.989	0.982	0.971	0.940	0.005
Power Consumed by UUT (W)	134.3W	9.03W	6.46W	4.16W	0.01W
Efficiency	90.00%	90.95%	90.37%	87.95%	:
Average Efficiency	89.82%				...

I. AC Input Voltage 230Vac/50Hz

Reported Quantity \ Load Conditions	100%* I ₀	75%* I ₀	50%* I ₀	25%* I ₀	0%* I ₀
Rms Output Current (mA.)	2500mA.	1875mA	1250mA.	625mA.	0mA
Rms Output Voltage(V)	48.230V	48.300V	48.350V	48.400V	48.840V
Active Output Power(W)	120.58W	90.56W	60.44W	30.25W	0.00W
Rms Input Voltage(V)	230V	230V	230V	230V	230V
Rms Input Current (A)	0.607A.	0.468A	0.329A.	0.185A	0.031A
Rms Input Power(W)	132.20W	99.80W	67.90W	35.76W	0.40W
Voltage T.H.D. (%)	0.15	0.15	0.14	0.13	0.12
True Power Factor	0.947	0.927	0.897	0.843	0.056
Power Consumed by UUT(W)	11.63W	9.24W	7.46W	5.51W	0.40W
Efficiency	91.21%	90.74%	89.01%	84.59%	***
Average Efficiency	88.89%				*