# 200W
## Switching Power Adapter
# SPECIFICATION



| | | |
|---|---|---|
| **Description** | : | **48Volts / 4.2Amps** |
| **Part No.** | : | **AD-AT48042** |
| **Version** | : | **02** |
| **Date** | : | **14 - Jul. - 2010** |

# 1. Feature：

- ♦ **Input** : **Universal 100 ~ 240 Vac / 47 ~ 63 Hz Input, without any slide switch.**
- ♦ **Output** : **+48V / 0 ~ 4.2A**
- ♦ **Case Dimension** : **183.2(L) * 81.0(W) * 42.3(H) mm**
- ♦ **Efficiency** : **Eff (av) ≧ 87%**
- ♦ **Safety** : **CUL / UL / GS / BSMI**
- ♦ **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** | **2.8A Max.** |
| **2.4 Inrush Current** | **100A Max. / 240Vac (Cold start at 25 ºC，full load)** |
| **2.5 Efficiency** | **Eff (av) ≧ 87% (At 115 Vac & 230 Vac)** |
| **2.9 Power Consumption** | **Pi ≦ 0. 5W ( At 240Vac & No load)** |
| **2.7 Power Factor (PF)** | **Pi ≧ 0. 9 (At 115 Vac & 230 Vac, At Full 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** | **+48.00V ± 5%** |
| | **Current** | **4.2A Max.** |
| | **Regulation** | **45.6Vmin. ~ 48.0Vtyp. ~ 50.4max.** |
| | **Ripple & Noise** | **960mV Max.** |
| | **Total Power** | **200W 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) | Vout * (105% ~ 150%) |
| 4.2 Over Current Protection(OCP) | Iout * (105% ~ 150%) |
| 4.3 Short Circuit Protection (SCP) | Latch. |
| 4.4 Over Temperature Protection (OTP) | Latch. |

Remark : When Short Circuit Protection or Over Current Protection or Over Voltage Protection or Over Temperature Protection is activated, the power supply will latch.

## 5. Safety、EMI and EMC Requirement :

### 5.1 Safety Requirement

a. Safety : CUL / UL / GS / BSMI

b. Dielectric Strength : Cut off current 10mA

| | | |
|---|---|---|
| (1) | Primary to Secondary | 1800Vac 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 Met.

5.3 Leakage Current : Less than 3.5mA

## 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.

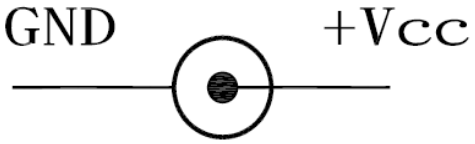
## 7. M.T.B.F. : 50,000 hours min. (at 25℃, by MIL-HDBK-217F)

# 8. Mechanical :

**8.1 Weight : 800g Typical**

**8.2 Cable Type : Black UL2464 AWG16 * 2C**
**(Wire + Plug)**

**Plug : ψ 5.5*2.5*9.5 (Cannelure)**



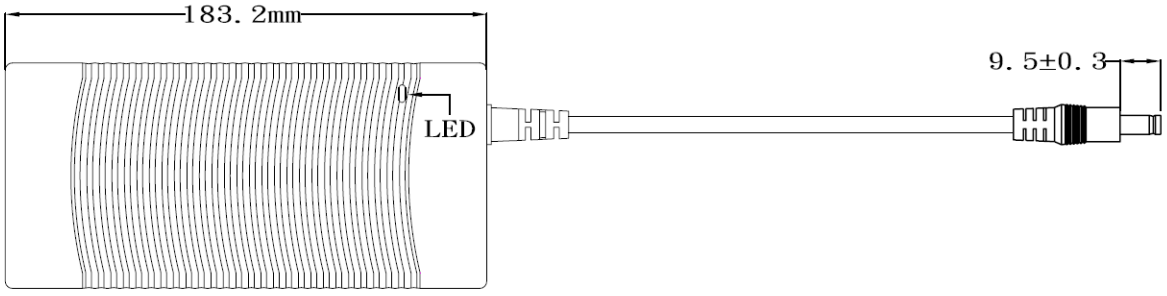

**Output Cable Plug Pin Assignment**

**8.3 Cable Length : 1500mm**

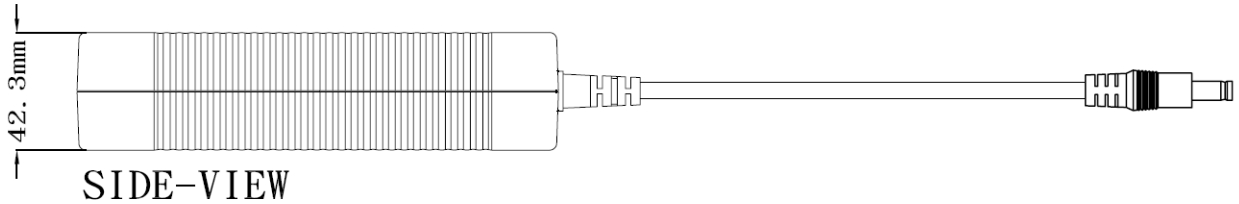
**8.4 Case Dimension : 183.2mm(L) * 81.0mm(W) * 42.3mm(H)**

**8.5 Material Flammability : UL 94V-0**

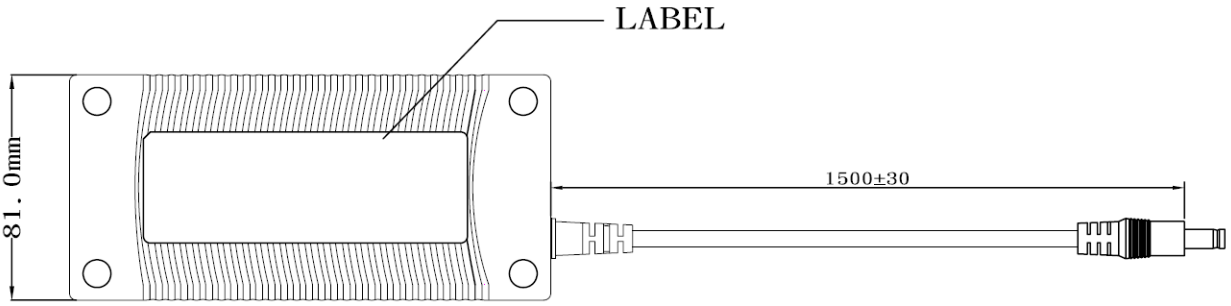
**8.6 External Appearance : As drawing below ( Scale → mm )**



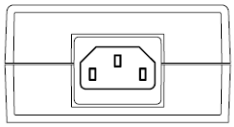

TOP-VIEW




SIDE-VIEW




BOTTOM-VIEW



FRONT-VIEW

# A. Line Regulation Test

**Test Result** :

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 90Vac / 50 % Load | 45.6 V ~ 50.4 V | 48.36V | 48.23V | 48.18V |
| 115Vac / 50 % Load | 45.6 V ~ 50.4 V | 48.36V | 48.23V | 48.18V |
| 132Vac / 50 % Load | 45.6 V ~ 50.4 V | 48.36V | 48.23V | 48.18V |
| 180Vac / 50 % Load | 45.6 V ~ 50.4 V | 48.37V | 48.23V | 48.18V |
| 230Vac / 50 % Load | 45.6 V ~ 50.4 V | 48.37V | 48.23V | 48.18V |
| 264Vac / 50 % Load | 45.6 V ~ 50.4 V | 48.37V | 48.23V | 48.18V |

# B. Efficiency Test

**Test Result** :

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 115Vac | 87 % Min. | 92.07% | 91.96% | 91.56% |
| 230Vac | 87 % Min. | 93.14% | 93.24% | 92.77% |

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

**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 | 45.6 V ~ 50.4 V | 48.59V | 48.46V | 48.43V |
| 115Vac / 50 % Load | 45.6 V ~ 50.4 V | 48.36V | 48.23V | 48.19V |
| 115Vac / 100 % Load | 45.6 V ~ 50.4 V | 48.17V | 48.03V | 47.97V |
| 230Vac / 0 % Load | 45.6 V ~ 50.4 V | 48.59V | 48.45V | 48.46V |
| 230Vac / 50 % Load | 45.6 V ~ 50.4 V | 48.37V | 48.23V | 48.18V |
| 230Vac / 100 % Load | 45.6 V ~ 50.4 V | 48.17V | 48.02V | 47.95V |

# D. Ripple & Noise Test

**Test Result** :

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 115Vac / 100 % Load | 960mV Max. | 531mV | 459mV | 519mV |

| | | | | |
|---|---|---|---|---|
| 230Vac / 100 % Load | 960mV Max. | 569mV | 487mV | 556mV |

## E. Inrush Current

**Test Result** :

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 240Vac / 100 % Load | 100A Max. | 76.9A | 77.5A | 78.3A |

## F. Over Voltage Protection

**Test Result** :

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 115Vac | Vout*(105%~150%) | 138% | 137% | 137% |
| 230Vac | Vout*(105%~150%) | 138% | 137% | 138% |

## G. Over Current Protection

**Test Result** :

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 115Vac | Iout*(105%~150%) | 118% | 120% | 119% |
| 230Vac | Iout*(105%~150%) | 119% | 120% | 119% |

## H. Short Circuit Protection

**Test Result** :

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 115Vac | Latch | OK | OK | OK |
| 230Vac | Latch | OK | OK | OK |

## I. Input Power Consumption(No Load)

**Test Result** :

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 230Vac / 0 % Load | ≦ 0.5 W | 0.468W | 0.463W | 0.461W |

## J. Power Factor

**Test Result** :

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 115Vac / 100 % Load | ≧ 0.9 | 0.986 | 0.992 | 0.992 |

| | | | | | |
|---|---|---|---|---|---|
| 230Vac / 100 % Load | ≧ 0.9 | 0.990 | 0.995 | 0.991 |

# Efficiency Test Report

A. Model Number: AD-AT48042(48V/4.2A)

B. DC Power Cord: UL2464,16AWG*2C,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 | 0.5Wmax. |
| Erp (Stage 2) | 0.5Wmax. |
| MEPS V | 0.5Wmax. |

E. Testing Equipment

| | | |
|---|---|---|
| 1. AC Power Source | "APE" | APW-1l0N |
| 2. Electronic Load | " PRODIGIT" | 3356 |
| 3. Power Meter | "YOKOGAWA" & "IDRWT210 | |
| 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) | 4200mA | 3150mA | 2100mA | 1050mA | 0mA |
| Rms Output Voltage(V) | 48.160V | 48.260V | 48.360V | 48.460V | 45.580V |
| Active Output Power(W) | 202.27W | 152.02W | 101.56W | 50.88W | 0.00W |
| R.tns Input Voltage(V) | 115V | 115V | 115V | 115V | 115V |
| R.tns Input Current(A) | 1.938A | 1.446A | 0.964A | 0.496A | 0.045A |
| R.tns Input Power(W) | 219.70W | 164.40W | 109.60W | 56.70W | 0.39W |
| Voltage T.H.D.(%) | 0.51 | 0.28 | 0.18 | 0.11 | 0.10 |
| True Power Factor | 0.986 | 0.989 | 0.989 | 0.994 | 0.075 |
| Power Consumed by UUT(W) | 17.43W | 12.38W | 8.04W | 5.82W | 0.39W |
| Efficiency | 92.07% | 92.47% | 92.66% | 89.74% | * |
| Average Efficiency | 91.73% | | | | * |

G. AC Input Voltage: 230Vac/50Hz

| Load Conditions / Reported Quantity | 100%* $I_0$ | 75%* $I_0$ | 50%* $I_0$ | 25%* $I_0$ | 0%* $I_0$ |
|---|---|---|---|---|---|
| R.tns Output Current(mA) | 4200mA | 3150mA | 2100mA | 1050mA | 0mA |
| R.tns Output Voltage(V) | 48.170V | 48.270V | 48.370V | 48.470V | 48.580V |
| Active Output Power(W) | 202.31W | 152.05W | 101.58W | 50.89W | 0.00W |
| R.tns Input Voltage(V) | 230V | 230V | 230V | 230V | 230V |
| R.tns Input Current(A) | 0.946A | 0.718A | 0.499A | 0.320A | 0.035A |
| R.tns Input Power(W) | 215.30W | 162.30W | 108.80W | 55.60W | 0.47W |
| Voltage T.H.D.(%) | 0.15 | 0.13 | 0.13 | 0.12 | 0.10 |
| True Power Factor | 0.990 | 0.983 | 0.948 | 0.755 | 0.059 |
| Power Consumed by UUT(W) | 12.99W | 10.25W | 7.22W | 4.71W | 0.47W |
| Efficiency | 93.97% | 93.68% | 93.36% | 91.54% | * |
| Average Efficiency | 93.14% | | | | * |