# Adapter Technology Co., Ltd.

# Specification for Approval

| | | |
|---|---|---|
| **Customer** | : | **ELFA AB** |
| **Part Name** | : | **AC ADAPTER** |
| **Description** | : | **12Volts / 16Amps** |
| **Model No.** | : | **STD-12160 (LEVEL V)** |
| **Customer P / N** | : | **69-234-86** |
| **Product P / N** | : | **RXTD12160D15202** |
| **Issued Date** | : | **03 - Feb. - 2012** |
| **Version** | : | **A2** |
| **Issued Stamp** | : | |

| Customer's Approval Signature |
|---|
| |

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**E-mail : service_tw@ adaptertech.com.tw；service@ adaptertech.com.tw**

**Factory (China)：BOAYANG ELECTRONICS CO., LTD.**
**Di Feng Gong Ye Qu 2 Hao,Xiasha Liuwu Village, Shipai Town, Dong Guan City, Guang Dong Province,China**
**TEL：86-0769-8136-9899；86-0769-8136-0909；86-0769-8136-9008**
**86-0769-8186-8338；86-0769-8186-8900**
**FAX：86–0769-8136-9009**

# 192W
# AC ADAPTER
# SPECIFICATION

| | | |
|---|---|---|
| **Model No.** | : | **STD-12160 (LEVEL V)** |
| **Description** | : | **12Volts / 16Amps** |
| **Part No.** | : | **RXTD12160D15202** |
| **Version** | : | **A2** |
| **Date** | : | **03 - Feb. – 2012** |

| Approved | Checked | Prepared |
|---|---|---|
| | | |

# ■ Approval Documents/Spec. Revised Records

- ■ Customer : ELFA AB
- ■ Model No. : STD-12160
- ■ Original Documents Content : Spec. 10 Pages, Attachment 3 Pages

| Revised Records : No. | Date (mm/dd/yyyy) | Description ( Before / After ) | Page(s) Revised | Revised By (Adapter/Customer) | Version |
|---|---|---|---|---|---|
| 1 | 12/16/2011 | ISSUE | - | Wentsai | A1 |
| 2 | 02/03/2012 | Revise Caution on nameplate | P7 | Wentsai | A2 |
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## 1. Feature：

- ♦ Input ： Universal 100 ~ 240 Vac / 47 ~ 63 Hz Input, without any slide switch.
- ♦ Output ： +12V / 0 ~ 16A
- ♦ Case Dimension ： 183.2(L) * 81.0(W) * 42.3(H) mm
- ♦ Efficiency ： Eff (av) ≧ 87%
- ♦ Safety ： CUL / UL / GS / PSE / 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) |
| 2.6 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 | +12.00V ± 5% |
| | Current | 16A Max. |
| | Regulation | 11.4Vmin. ~ 12.0Vtyp. ~ 12.6Vmax. |
| | Ripple & Noise | 240mV Max. |
| | Total Power | 192W 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 / PSE / 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)

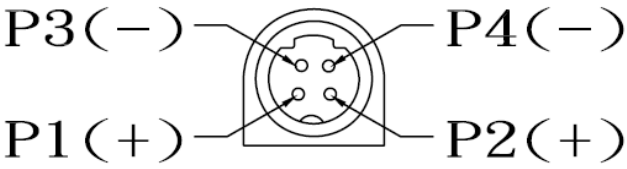
## 8. Mechanical :

**8.1 Weight : 830g Typical**

**8.2 Cable Type : Black UL2464 AWG16 * 4C**

**(Wire + Plug)**

**Plug : 4PIN DIN**



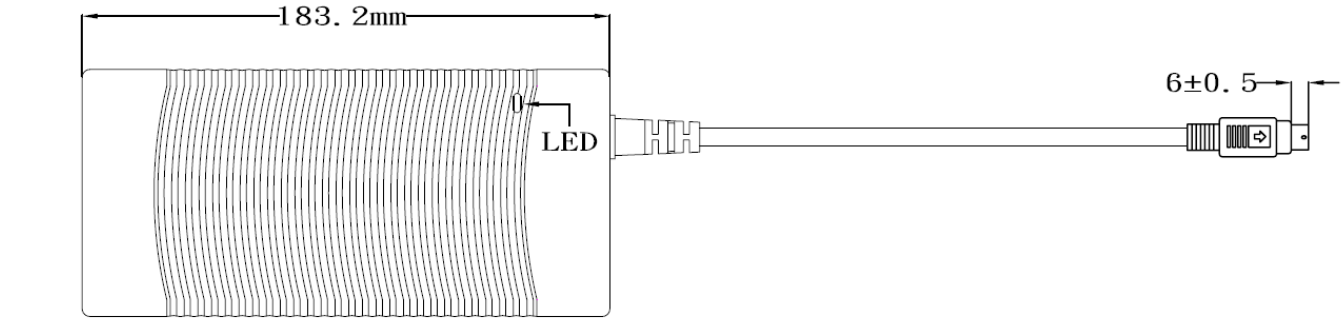

**Output Cable Plug Pin Assignment**

**8.3 Cable Length : 1500mm**

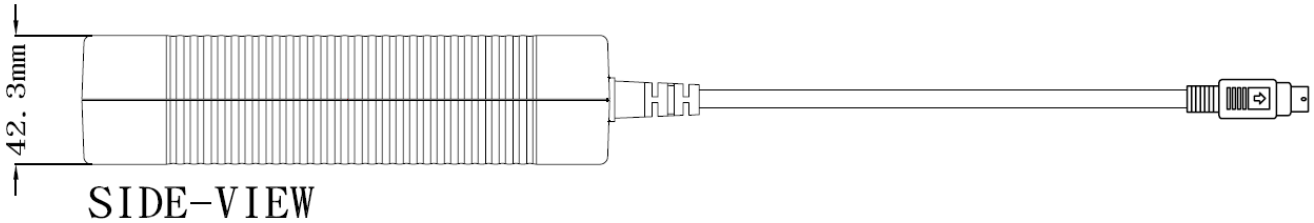
**8.4 Case Dimension : 183.2mm(L) * 81.0mm(W) * 42.3mm(H)**

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

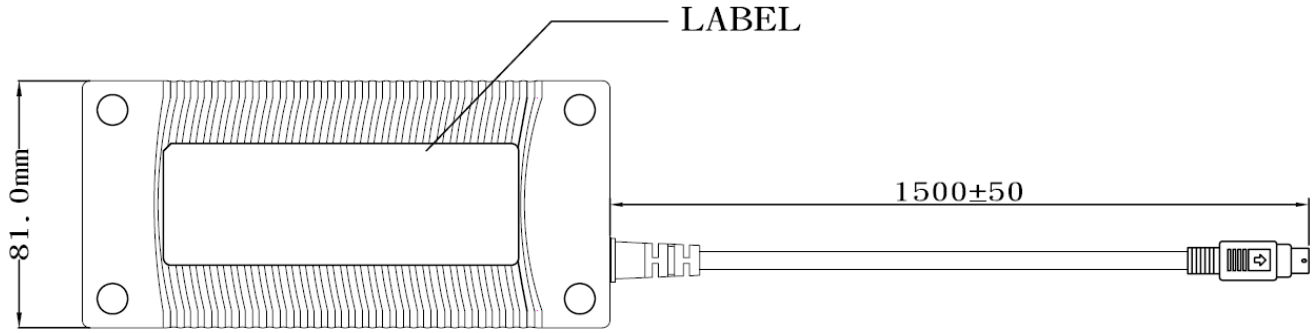
**8.6 External Apperance : As drawing below ( Scale → mm )**



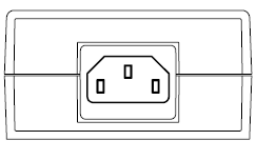

TOP-VIEW




SIDE-VIEW



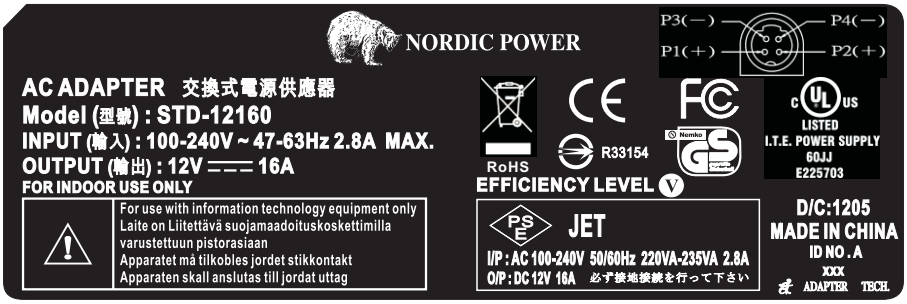

BOTTOM-VIEW



FRONT-VIEW

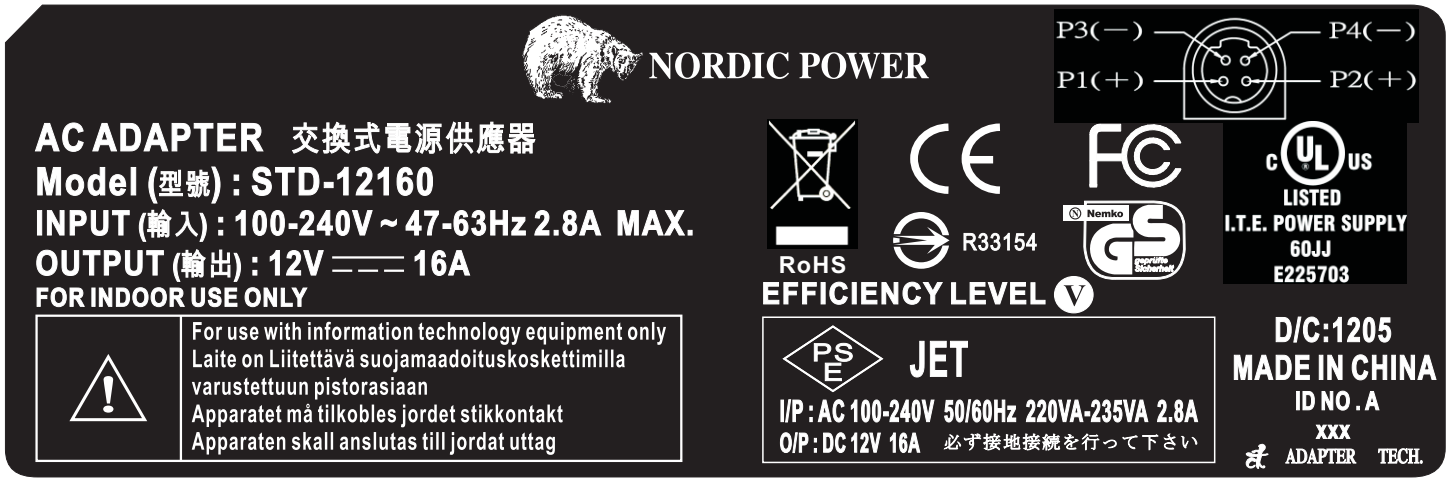
8.7 Spec. Label Materials : Metalized Polyester Label ( Silver Gloss )
Color : Black Background with Silver Printing
Label Dimension : 39mm(H)*119mm(W)

100%




"XXX"
Label supplier's code.
It is accurate that the number of words depends on the real finished product.

160%




# Label Part No. : 9443030771

## A. Line Regulation Test

**Test Result ：**

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 90Vac / 50 % Load | 11.4 V ~ 12.6 V | 12.015V | 12.011V | 11.982V |
| 115Vac / 50 % Load | 11.4 V ~ 12.6 V | 12.016V | 12.011V | 11.982V |
| 132Vac / 50 % Load | 11.4 V ~ 12.6 V | 12.016V | 12.011V | 11.982V |
| 180Vac / 50 % Load | 11.4 V ~ 12.6 V | 12.017V | 12.011V | 11.982V |
| 230Vac / 50 % Load | 11.4 V ~ 12.6 V | 12.016V | 12.011V | 11.982V |
| 264Vac / 50 % Load | 11.4 V ~ 12.6 V | 12.017V | 12.011V | 11.982V |

## B. Efficiency Test

**Test Result ：**

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 115Vac | 87 % Min. | 88.32% | 88.34% | 88.72% |
| 230Vac | 87 % Min. | 89.47% | 89.12% | 89.78% |

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

**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 | 12.256V | 12.267V | 12.208V |
| 115Vac / 50 % Load | 11.4 V ~ 12.6 V | 12.016V | 12.012V | 11.979V |
| 115Vac / 100 % Load | 11.4 V ~ 12.6 V | 11.791V | 11.755V | 11.749V |
| 230Vac / 0 % Load | 11.4 V ~ 12.6 V | 12.245V | 12.268V | 12.208V |
| 230Vac / 50 % Load | 11.4 V ~ 12.6 V | 12.016V | 12.011V | 11.980V |
| 230Vac / 100 % Load | 11.4 V ~ 12.6 V | 11.790V | 11.753V | 11.752V |

## D. Ripple & Noise Test

**Test Result ：**

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 115Vac / 100 % Load | 240mV Max. | 141mV | 109.4mV | 110.9mV |
| 230Vac / 100 % Load | 240mV Max. | 135mV | 107.8mV | 118.7 mV |

## E. Inrush Current

**Test Result ：**

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 240Vac / 100 % Load | 100A Max. | 72.5A | 71.2A | 73.7A |

## F. Over Voltage Protection

**Test Result ：**

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 115Vac | Vout*(105%~150%) | 128% | 130% | 129% |
| 230Vac | Vout*(105%~150%) | 128% | 131% | 130% |

## G. Over Current Protection

**Test Result ：**

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 115Vac | Iout*(105%~150%) | 119% | 122% | 117% |
| 230Vac | Iout*(105%~150%) | 119% | 122% | 117% |

## 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 | 0.335W | 0.326W | 0.330W |

## J. Power Factor

**Test Result ：**

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 115Vac / 100 % Load | ≧ 0.9 | 0.994 | 0.988 | 0.993 |
| 230Vac / 100 % Load | ≧ 0.9 | 0.989 | 0.988 | 0.988 |

# Efficiency Test Report

A. Model Number : STD-12160 ( 12V / 16A )

B. DC Power Cord : UL2464 , 16AWG*4C , 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

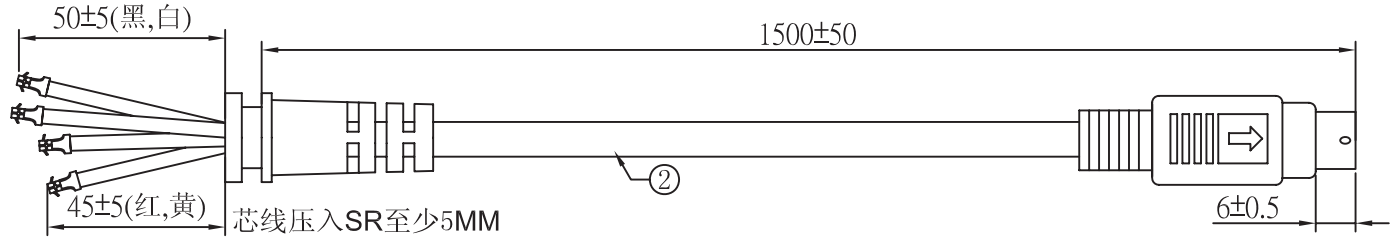
F. AC Input Voltage : 115Vac/60Hz

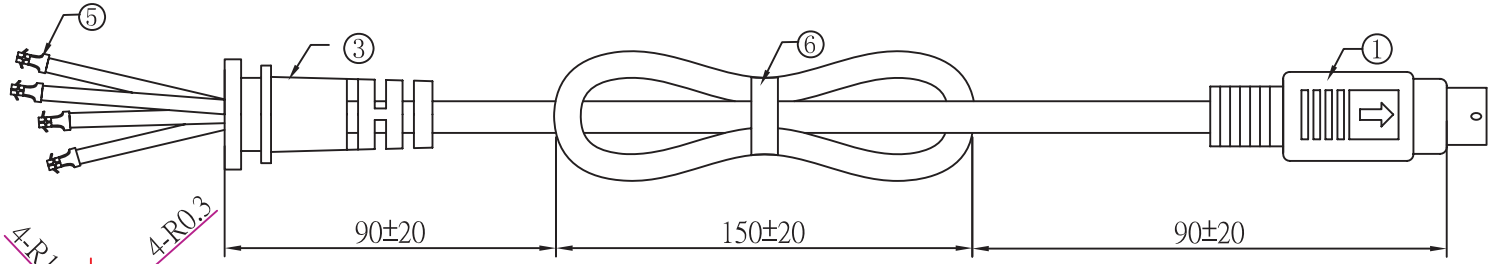
| Load Conditions / Reported Quantity | 100%* $I_0$ | 75%* $I_0$ | 50%* $I_0$ | 25%* $I_0$ | 0%* $I_0$ |
|---|---|---|---|---|---|
| Rms Output Current(mA) | 16000mA | 12000mA | 8000mA | 4000mA | 0mA |
| Rms Output Voltage(V) | 11.751V | 11.864V | 11.979V | 12.094V | 12.210V |
| Active Output Power(W) | 188.02W | 142.37W | 95.83W | 48.38W | 0.00W |
| Rms Input Voltage(V) | 115V | 115V | 115V | 115V | 115V |
| Rms Input Current(A) | 1.879A | 1.398A | 0.929A | 0.481A | 0.033A |
| Rms Input Power(W) | 214.60W | 159.40W | 106.50W | 55.00W | 0.28W |
| Voltage T.H.D.(%) | 0.49 | 0.23 | 0.16 | 0.17 | 0.10 |
| True Power Factor | 0.993 | 0.991 | 0.997 | 0.994 | 0.074 |
| Power Consumed by UUT(W) | 26.58W | 17.03W | 10.67W | 6.62W | 0.28W |
| Efficiency | 87.61% | 89.31% | 89.98% | 87.96% | * |
| Average Efficiency | 88.72% | | | | * |

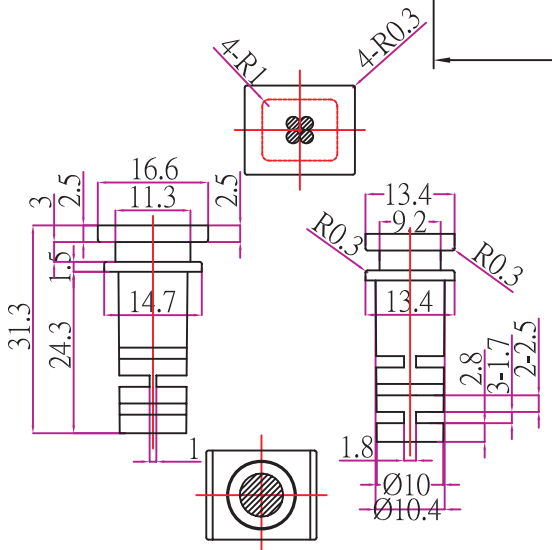
G. AC Input Voltage : 230Vac/50Hz

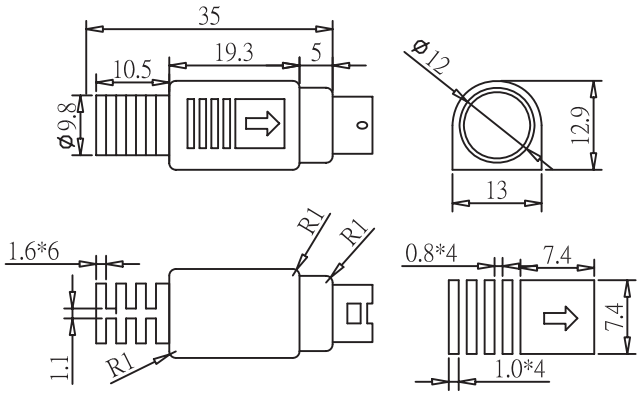
| Load Conditions / Reported Quantity | 100%* $I_0$ | 75%* $I_0$ | 50%* $I_0$ | 25%* $I_0$ | 0%* $I_0$ |
|---|---|---|---|---|---|
| Rms Output Current(mA) | 16000mA | 12000mA | 8000mA | 4000mA | 0mA |
| Rms Output Voltage(V) | 11.752V | 11.865V | 11.980V | 12.094V | 12.210V |
| Active Output Power(W) | 188.03W | 142.38W | 95.84W | 48.38W | 0.00W |
| Rms Input Voltage(V) | 230V | 230V | 230V | 230V | 230V |
| Rms Input Current(A) | 0.922A | 0.699A | 0.486A | 0.307A | 0.034A |
| Rms Input Power(W) | 210.30W | 157.90W | 105.40W | 54.60W | 0.39W |
| Voltage T.H.D.(%) | 0.16 | 0.13 | 0.13 | 0.19 | 0.10 |
| True Power Factor | 0.992 | 0.982 | 0.943 | 0.773 | 0.050 |
| Power Consumed by UUT(W) | 22.27W | 15.52W | 9.56W | 6.22W | 0.39W |
| Efficiency | 89.41% | 90.17% | 90.93% | 88.60% | * |
| Average Efficiency | 89.78% | | | | * |

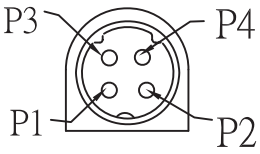
Tester : Wentsai



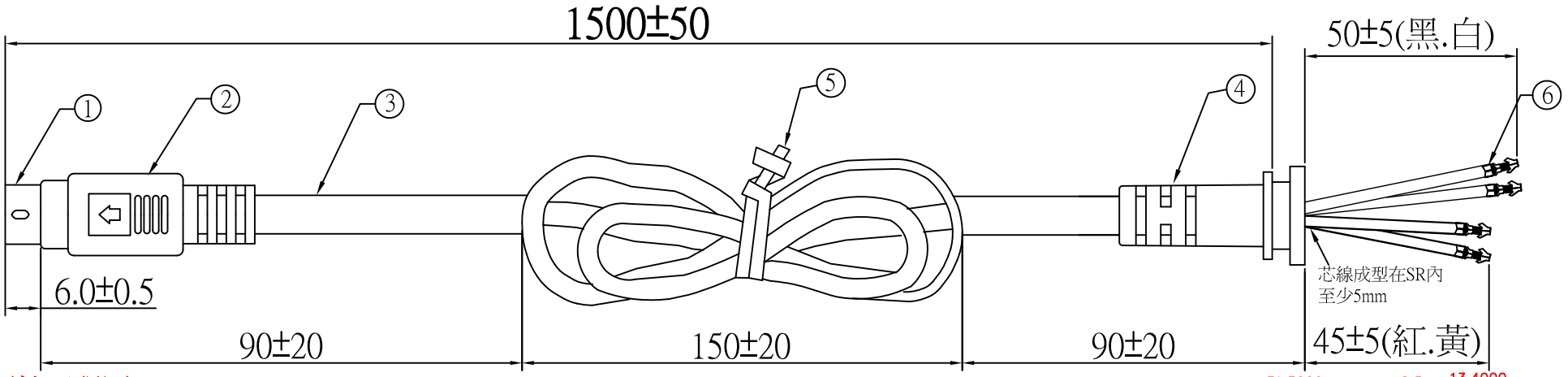

正面圖

| 芯線 | 黃色 | 紅色 | 白色 | 黑色 |
|---|---|---|---|---|
| PIN | P1 | P2 | P3 | P4 |

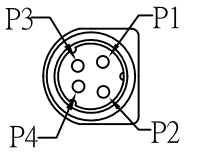
注意:此圖面所需材料符合"ROHS"標準

① 4PIN 粗針成型式,外模P-180號模(二次成型),大網尾,單箭頭,用料外PVC60P黑色
② UL 2464 16AWG(0.254*26)*4C(紅,黑,白,黃)过粉线 BK亮 OD:6.5 裁線長度:1560+10/-0
③ SR-511号模,用料PVC60P黑色(YY-PVC-00009):吊重:1米/20磅/60秒
④ PE有鐵芯紮帶14CM(YY-ES-00001)
⑤ 机板端:D262A(旗欣提供)*4PCS
⑥ 絕緣阻抗:20Ω,導通阻抗:1.5Ωmax
⑦ 單位:MM

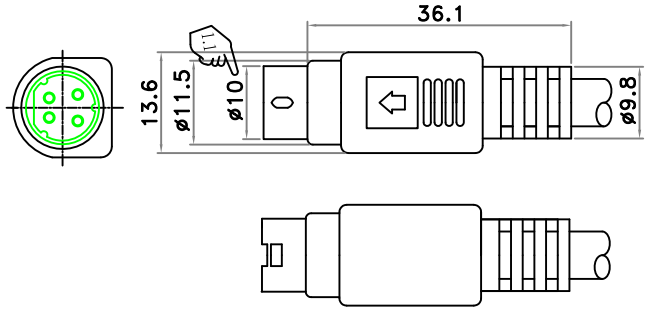
| | | | |
|---|---|---|---|
| 料號 | R44R1515013 | | |
| 客戶 | 阿達特 | 制圖 | 吴远松 |
| 版次 | 01 | 初審 | |
| 頁數 | 01 | 審核 | |
| | | 批準 | |
| 泰岳電子有限公司 | | | |
| 圖號 | ADT-1642 | 日期 | 2010/04/01 |




## 焊接極性正視圖




P1 ○— 接紅色芯線
P2 ○— 接黃色芯線
P3 ○— 接黑色芯線
P4 ○— 接白色芯線
外殼○— 不接

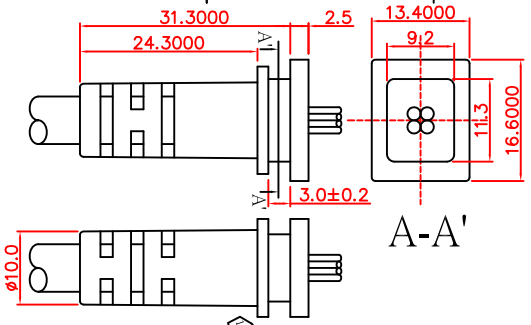



相關測試要求:

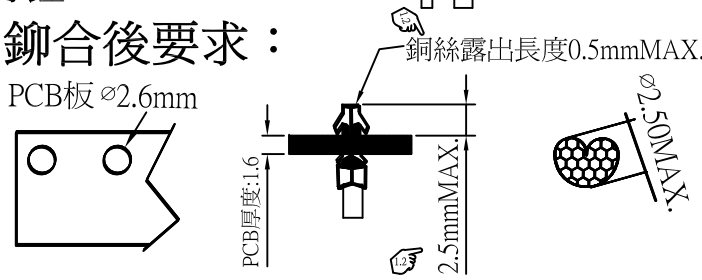
一.電性測試:
1.耐電壓:AC 500V/秒,測試無異常;
2.絕緣抵抗:DC 500V 20MΩ 以上;
3.導通測試:無斷線.短路.極性反;

二.拉力測試:電線與S/R間吊重9.1kg經過1分鐘
無斷線脫落等異常.

三.搖擺測試:
電線與PG間吊重200g,40回/分,
角度±60°往復1000回不完全斷線.
且外觀無脫落.斷裂等異常.




## 鉚合後要求：




## 阿達特料號:

| 序號 | 部品 | 規格 |
|---|---|---|
| 6. | Terminal | P1811T2P-2E或同級品 |
| 5. | 扎帶 | PE有鐵絲 黑 |
| 4. | S/R | 模具編號: DM-SR-3263<br>用料:黑色軟質PVC |
| 3. | Wire | UL2464 16AWG (0.254/26)/4C(紅.黑.白.黃)黑霧面OD:⌀6.5mm |
| 2. | Plug | 模具編號: DM-PG-3316<br>用料:內模/透明PE 外模/黑色軟質PVC |
| 1. | Pin | POWER DIN 4PIN 成型式 |

| 投影 | | | | | |
|---|---|---|---|---|---|
| 制作日期 2011.08.13. | 三角法 3RD.ANGLE. | 單位 mm .DIM. | 比例 .SCALE. | 份數 1 .QTY. | |
| 制圖 .DRW. | 校圖 .CHKD. | 承認:.APPD. | 承認:APPD. | 公差 .TOLERANCE. | |
| 劉凱 | 王亞琴 | 李秋林 | | 一般公差 | ±0.3 |

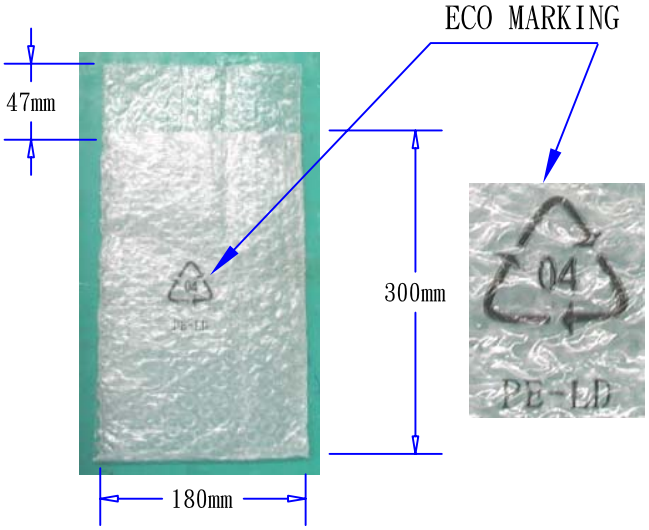
| REV. | DATE. | 變更 |
|---|---|---|
| 1.2 | 2011.11.07. | 追加端子鉚壓的尺寸要求! |
| 1.1 | 2011.11.07. | 修正筆誤標示尺寸及S/R模號! |

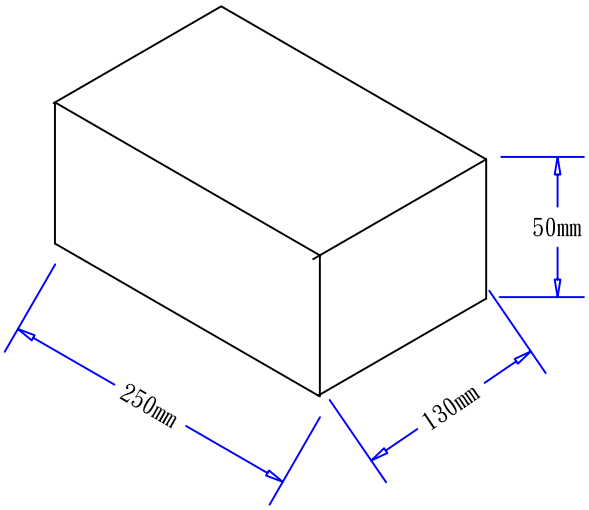
| | | |
|---|---|---|
| 客戶名 NAME. | 阿達特 | 版次 |
| 品名 .DWG.NO. | ADT037 | 1.2 |

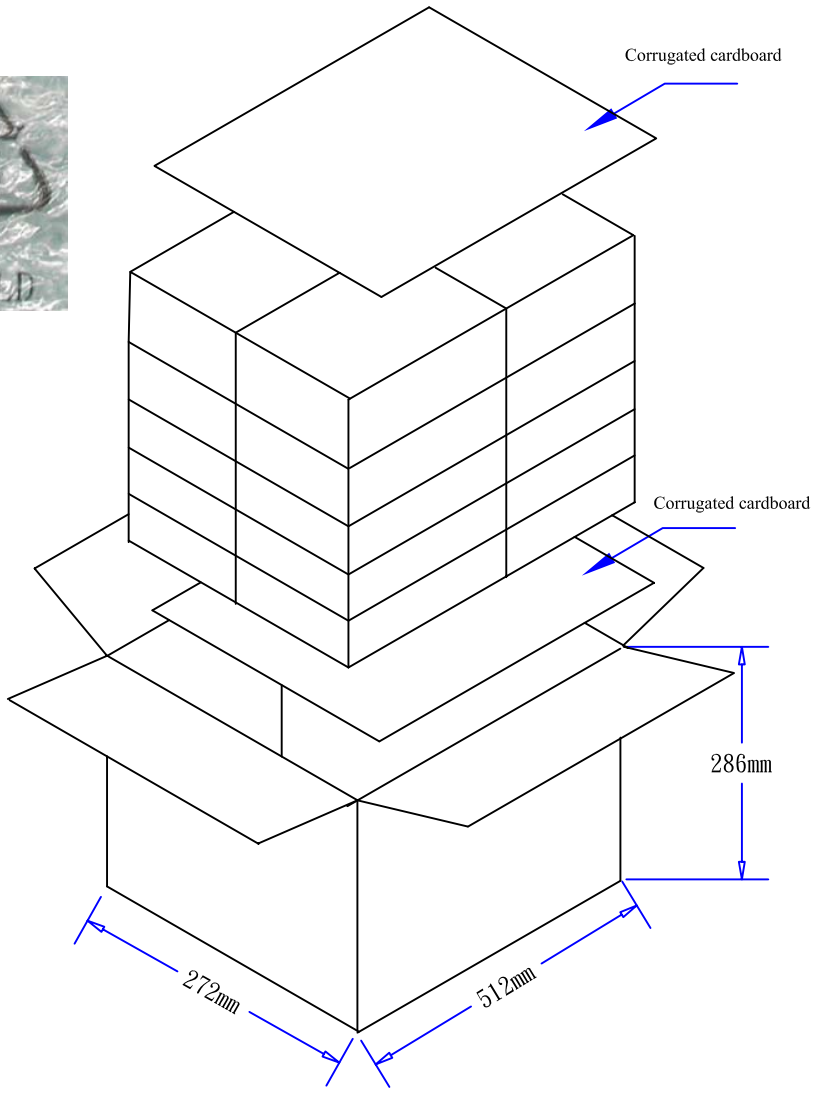
丹貿電子(惠州)有限公司

# PIS200W0003

| REVISIONS | | | | |
|---|---|---|---|---|
| SHOW | REV | DESCRIPTION | DATE | APPROVED |
| 0 | A | 按客戶要求,初版制作 | 10/07/22 | |
| | B | | | |
| | C | | | |




| | | | |
|---|---|---|---|
| 1. Corrugated cardboard:.500*260*6mm | B=B | 9550013001 | 2/20 |
| 2.Q'ty:4*5=20PCS | | | |
| 3.Master carton:L*W*H=512*272*286mm | K=K | 9520017101 | 1/20 |
| 4.White box:L*W*H=250*130*50mm | 350P+CE | 9510008101 | 1/1 |

5.PE bubble bag:300*180*47mm， no color and clear.
5.Carton, box marks with dimension
6.Above materials should be compliance with RoHS

| | | | | | |
|---|---|---|---|---|---|
| Adapter Technology Co., Ltd | DRAWING NO. 10-07-22-1 | | APPROVAL2 | | |
| | UNIT mm | 200W白盒裝 | APPROVAL1 | | |
| | | ADT-0045 | ENGINER | | |
| | SCALE | REV. A SHEET 1/1 | DRAWN BY | | |