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# ***Specification for Approval***

**Customer : Linkman Co.,Ltd.**

**Part Name : AC ADAPTER**

**Description : 15Volts / 1.6 Amps**

**Model No. : STD-15016U (USA / LEVEL V)**

**Customer P / N :**

**Product P / N : RXTD15016U415201**

**Issued Date : 18 - Oct. - 2016**

**Version : A2**

**Issued Stamp :**

<b>Customer's Approval Signature</b>

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**24W**  
**Switching Power Adapter**  
**SPECIFICATION**

**Model No.** : **STD-15016U (USA / Level V)**

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**Description** : **15 Volts / 1.6 Amps**

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**Part No.** : **RXTD15016U415201**

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**Version** : **A2**

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**Date** : **18 - Oct. - 2016**

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<b>Approved</b>	<b>Reviewed</b>	<b>Checked</b>	<b>Prepared</b>	<b>Sales</b>

## Approval Documents/Spec. Revised Records

KM Customer : Linkman Co.,Ltd.

KM Model No. : STD-15016U

KM Original Documents Content : Spec. 10 Pages, Attachment 2 Pages

Revised Records : No.	Date	Description ( Before / After )	Page(s) Revised	Revised By (Adapter/Customer)	Remark
1	Feb./26/2010	Issue	-	Wei	1.0
2	Jun./18/2010	LABEL modify	P-7	Wei	1.1
3	Nov./19/2015	Modify label & appearance	P6.P7	Wei	A1
4	Oct./18/2016	label update	P7	Wei	A2
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## 1. Feature :

- ◆ **Input** : **Universal 100 ~ 240 Vac / 47 ~ 63 Hz Input, without any slide switch.**
- ◆ **Output** : **+15V / 0~1.6 A**
- ◆ **Case Dimension** : **72mm(L)\*34mm(W)\*69mm(H) (±0.5mm)**
- ◆ **Efficiency** : **Eff (av) ≥ 82.22 % Min.**
- ◆ **Safety** : **PSE**
- ◆ **EMI** : **Class B ; Conduction & Radiation**
- ◆ **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 Energy Star V / Erp ( Stage 2 ) / MEPS V .**

## 2. Input :

<b>2.1 Voltage</b>	<b>Universal 100~240Vac, single phase</b>
<b>2.2 Frequency</b>	<b>47 ~ 63 Hz</b>
<b>2.3 Current</b>	<b>0.58A Max.</b>
<b>2.4 Inrush Current</b>	<b>30A Max. / 100Vac ; 45A Max. / 230Vac (Cold Start At 25 °C , Full Load)</b>
<b>2.5 Efficiency</b>	<b>Eff (av) ≥ 82.22 % Min. (At 115 Vac &amp; 230 Vac)</b>
<b>2.6 Power Consumption</b>	<b>Pi ≤ 0.3 W (At 115 Vac &amp; 230Vac &amp; No Load)</b>

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

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 :

<b>3.1 DC Output</b>	<b>Voltage</b>	<b>+15V ± 5%</b>
	<b>Current</b>	<b>1.6A Max.</b>
	<b>Regulation</b>	<b>14.25Vmin. ~ 15.0Vtyp. ~ 15.75Vmax.</b>
	<b>Ripple &amp; Noise</b>	<b>100 mVpp Max.</b>
	<b>Total Power</b>	<b>24W Max.</b>

**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)	18V (MAX)
4.2 Short Circuit Protection (SCP)	Automatic recovery after short-circuit fault being removed
4.3 Over Current Protection(OCP)	3A (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 : PSE

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

(1)	Primary to Secondary	3000Vac 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 : Class B ; Conduction & Radiation

5.3 Leakage Current : Less than 0.25mA

#### 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. : 300,000Hrs.(Calculated Hours at 25°C,By Telcordia SR-332)

## 8.Mechanical :

8.1 Weight : 165 g Typical

8.2 Cable Type : Black SPT-1 20AWG  
( Wire + Plug )

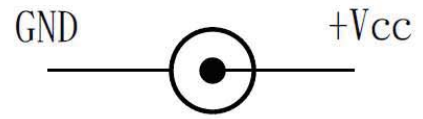
Plug :  $\varnothing 5.5 \times \varnothing 2.1 \times 9.5$ mm  
( Tuning Fork & Cannelure )

8.3 Cable Length : 1500mm

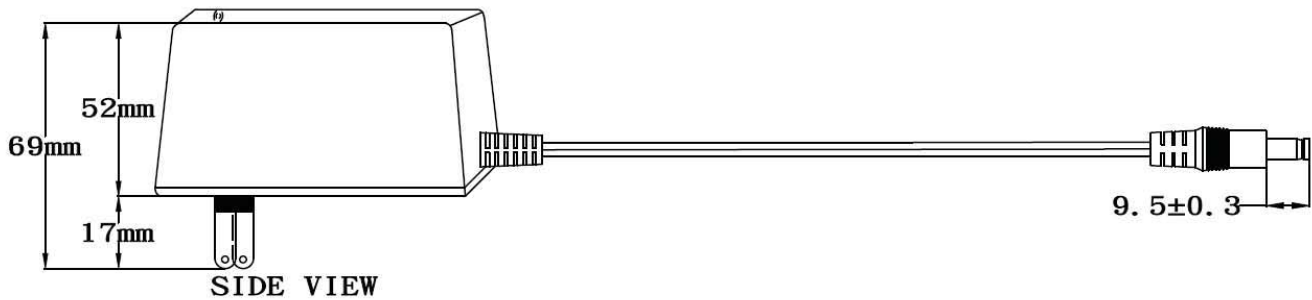
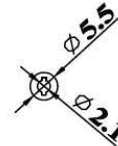
8.4 Case Dimension : 72mm(L)\*34mm(W)\*69mm(H) (  $\pm 0.5$ mm )

8.5 Material Flammability : UL 94V-0

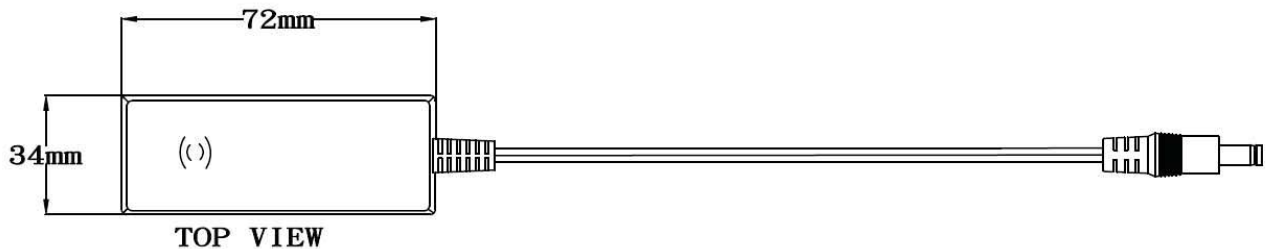
8.6 External Apperance : As drawing below ( Scale  $\rightarrow$  mm )



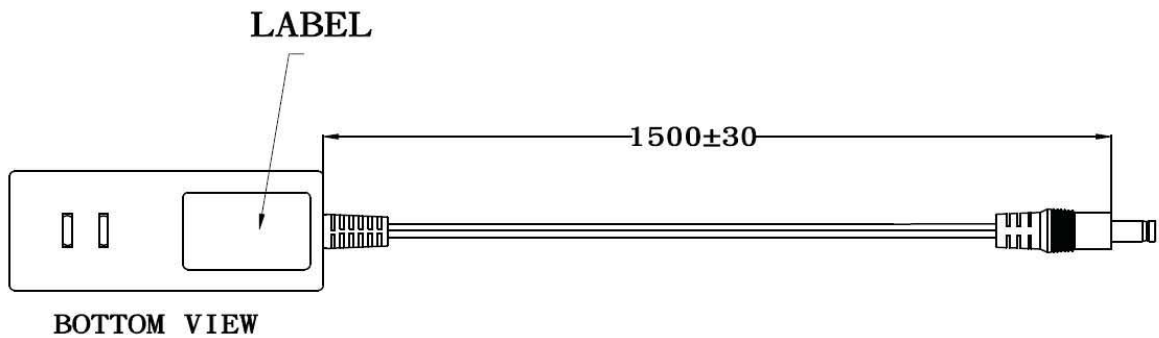
Output Cable Plug Pin Assignment



SIDE VIEW



TOP VIEW



BOTTOM VIEW

8.7 Spec. Label Materials : Metalized Polyester Label ( Silver Gloss )  
 Color : Black Background with Silver Printing  
 Label Dimension : 34.5mm(L)\*24.5mm(W)+/-0.1mm  
 Label Thickness : #75

100%



300%



"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.

**Label Part No. : 9443019393**

## A. Line Regulation Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
90Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V
115Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V
132Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V
180Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V
230Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V
264Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V

## B. Efficiency Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac	82.22 % Min..	83.86 %	83.77 %	83.57 %
230Vac	82.22 % Min..	82.89 %	82.75 %	82.33 %

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

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	14.25~15.75V	15.264 V	15.234 V	15.134 V
115Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V
115Vac / 100 % Load	14.25~15.75V	15.009 V	14.989 V	14.951 V
230Vac / 0 % Load	14.25~15.75V	15.264 V	15.234 V	15.134 V
230Vac / 50 % Load	14.25~15.75V	15.135 V	15.105 V	15.035 V
230Vac / 100 % Load	14.25~15.75V	15.009 V	14.989 V	14.951 V

## D. Ripple & Noise Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	100mVpp Max	56.7mVpp	55.4mVpp	55.1mVpp
230Vac / 100 % Load	100mVpp Max	52.5mVpp	50.8mVpp	51.7mVpp



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## E. Inrush Current

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	30A Max	28.1A	27.6A	28.3A
230Vac / 100 % Load	45A Max	42.9A	43.5A	42.1A

## F. Over Current Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	3A Max.	2.075A	2.158 A	2.101A
230Vac / 100 % Load	3A Max.	2.347 A	2.412 A	2.458A

## 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(No Load)

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
230Vac / 0 % Load	$\leq 0.3$ W	0.25W	0.26W	0.26W

## Efficiency Test Report

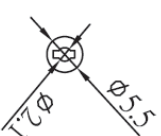
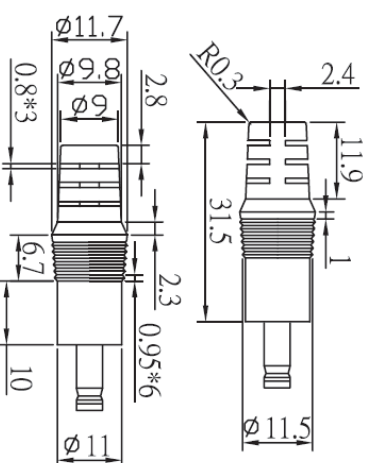
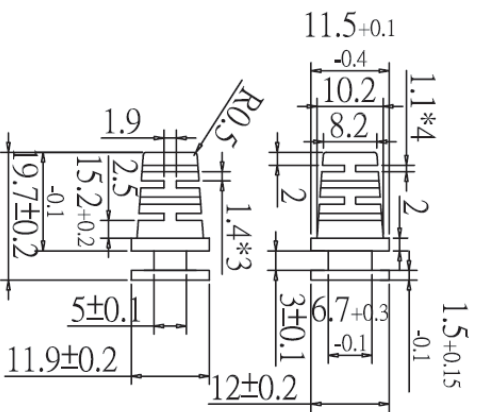
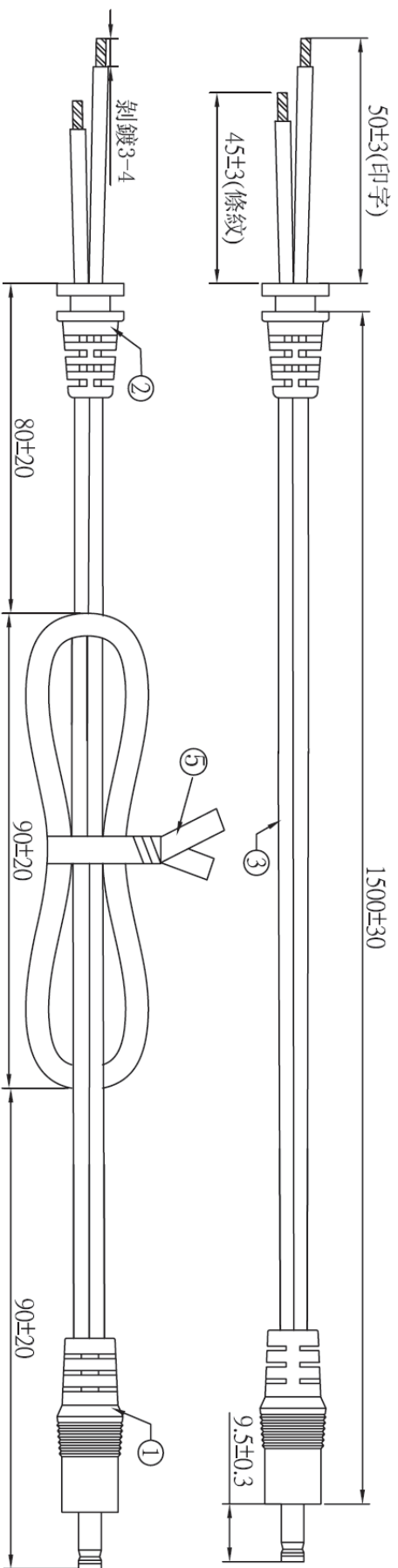
- A. Model Number** : STD-15016Z (Z=A,B,C,E,K,T,U,V) ( 15V / 1.6A / 24W )
- B. DC Power Cord** : UL2468 , 20AWG , 1.8M
- C. Average Efficiency** :
- Energy Star V** (0.0626\*Ln(Nameplate Output)+0.622) = 82.09 % Min.
- Erp ( Stage 2 )** (0.063\*Ln(Nameplate Output)+0.622) = 82.22 % Min.
- MEPS V** (0.0626\*Ln(Nameplate Output)+0.622) = 82.09 % Min.
- D. NO Load Power Consumption** :
- Energy Star V** 0.3W 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 " 3311C
- c. Power Meter** : " Zentech " 2100
- d. Digital Meter** : " FLUKE " 45
- F. AC Input Voltage** : 115Vac/60Hz

Load Conditions	100%* I <sub>0</sub>	75%* I <sub>0</sub>	50%* I <sub>0</sub>	25%* I <sub>0</sub>	0%* I <sub>0</sub>
Reported Quantity					
Rms Output Current(mA)	1600mA	1200mA	800mA	400mA	0mA
Rms Output Voltage(V)	14.982V	15.051V	15.120V	15.189V	15.267V
Active Output Power(W)	23.97W	18.06W	12.10W	6.08W	0.00W
Rms Input Voltage(V)	115V	115V	115V	115V	115V
Rms Input Current(A)	0.460A	0.361A	0.261A	0.152A	0.011A
Rms Input Power(W)	28.86W	21.55W	14.33W	7.22W	0.17W
T.H.D. (Voltage)	0.17	0.15	0.15	0.13	0.1
True Power Factor	0.544	0.518	0.475	0.411	0.132
Power Consumed by UUT(W)	4.89W	3.49W	2.23W	1.14W	0.17W
Efficiency	83.06%	83.81%	84.41%	84.15%	*
Average Efficiency	83.86%				*

- G. AC Input Voltage** : 230Vac/50Hz

Load Conditions	100%* I <sub>0</sub>	75%* I <sub>0</sub>	50%* I <sub>0</sub>	25%* I <sub>0</sub>	0%* I <sub>0</sub>
Reported Quantity					
Rms Output Current(mA)	1600mA	1200mA	800mA	400mA	0mA
Rms Output Voltage(V)	15.009V	15.072V	15.135V	15.197V	15.264V
Active Output Power(W)	24.01W	18.09W	12.11W	6.08W	0.00W
Rms Input Voltage(V)	230V	230V	230V	230V	230V
Rms Input Current(A)	0.315A	0.247A	0.173A	0.096A	0.016A
Rms Input Power(W)	28.70W	21.63W	14.54W	7.52W	0.25W
T.H.D. (Voltage)	0.24	0.2	0.16	0.13	0.1
True Power Factor	0.396	0.380	0.365	0.340	0.066
Power Consumed by UUT(W)	4.69W	3.54W	2.43W	1.44W	0.25W
Efficiency	83.67%	83.62%	83.27%	80.84%	*
Average Efficiency	82.85%				*

**Tester : Wei**



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條紋	印字

**注意:此圖面所需材料符合"ROHS"標準**

- ① 5.5\*2.1\*23音叉車溝黑色半邊(YYPD-00186),外模P-184號模(二次成型),用料外PVC60P黑色(YYPV-00009)
- ② SR-101號模,用料PVC60P黑色(YYPV-00009),吊重:1米/20磅/60秒
- ③ UL 2468 20AWG(0.16\*26) BK OD:1.9\*3.8(YYPDC-00164) 裁線長度:1560+10/-0
- ④ PE有鐵芯帶 10CM黑色(YYES-00001)
- ⑤ 絕緣阻抗:20Ω,導通阻抗:1.5Ωmax
- ⑥ 單位:MM

料號 R44M1915013

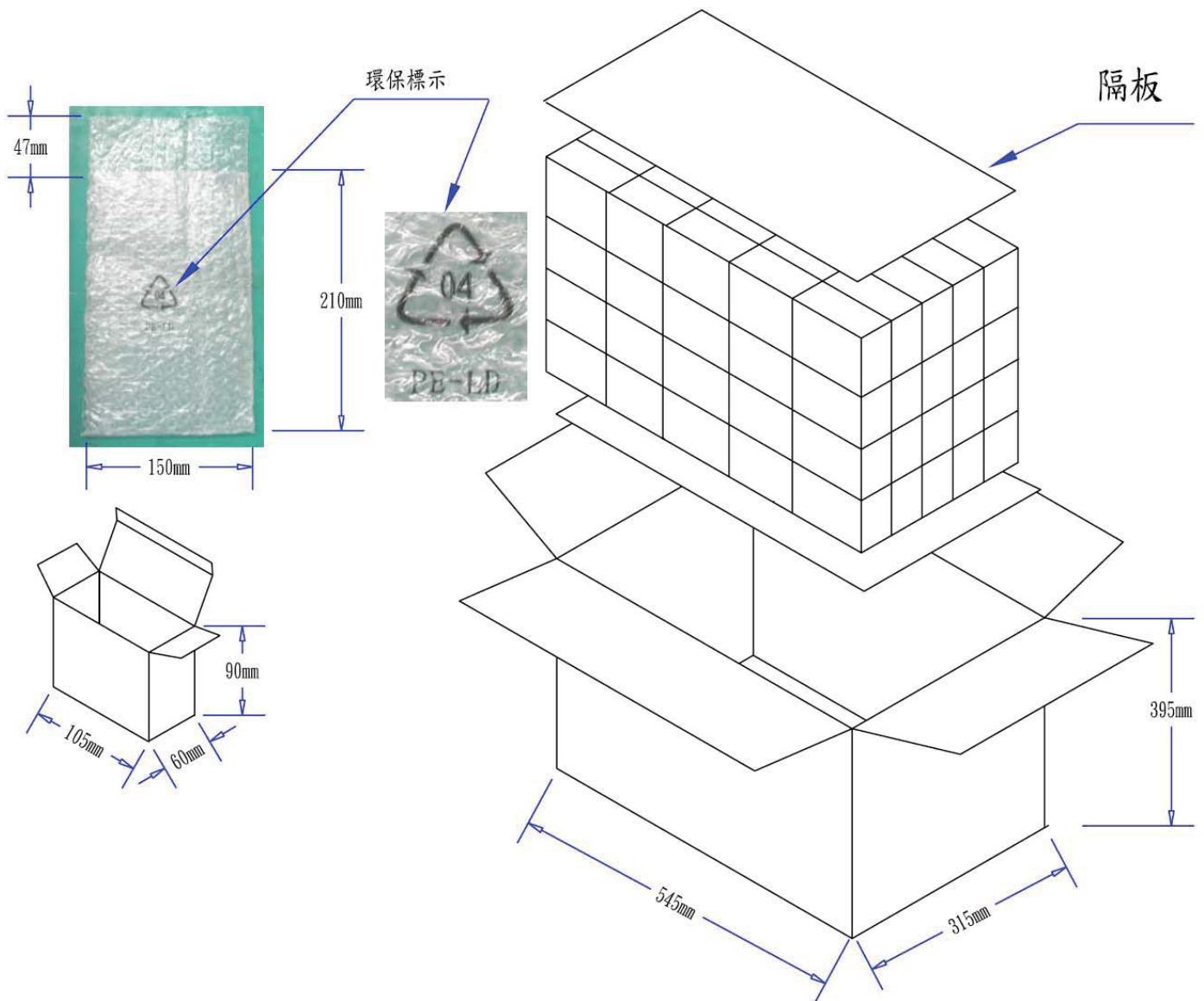
客戶 制圖 劉鋒

版次 02 初審

頁數 01 審核 批准

版次	內容
02	SR尺寸

圖號 日期 2009/06/04



- PIS18W00007 包裝(FOR 18W, 24W-插牆式)-環保雙面氣泡袋-白盒-100
1. 9550006001 隔板:530\*300\*6mm B=B 2/100
  2. 數量:25\*4=100PCS
  3. 9520006502 外箱:L\*W\*H=545\*315\*395mm K=K 1/100
  4. 9510003502 紙盒:L\*W\*H=105\*60\*90mm 白盒 350P+CE(即C9紙加裱350磅白板紙)
  5. 9540000901 氣泡袋:210\*150\*47mm 無色透明,中間位置印環保標示,短邊單端開口
  6. 成品裝入PE袋后,用小膠紙封口
  7. 外箱,紙盒標注為外徑尺寸
  8. 上述所有材料須符合環保ROHS標準.

8.7 Spec. Label Materials : Metalized Polyester Label ( Silver Gloss )  
 Color : Black Background with Silver Printing  
 Label Dimension : 34.5mm(L)\*24.5mm(W)+/-0.1mm  
 Label Thickness : #75

100%



300%



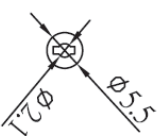
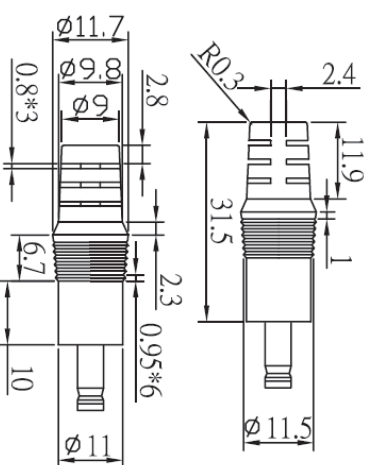
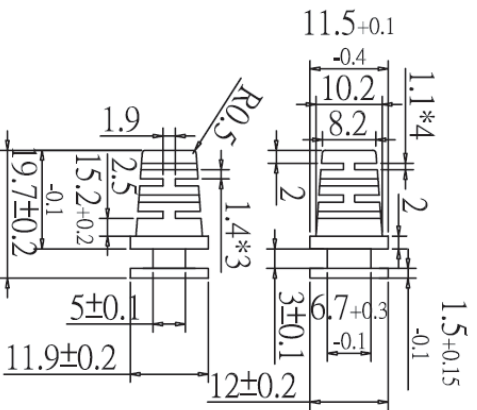
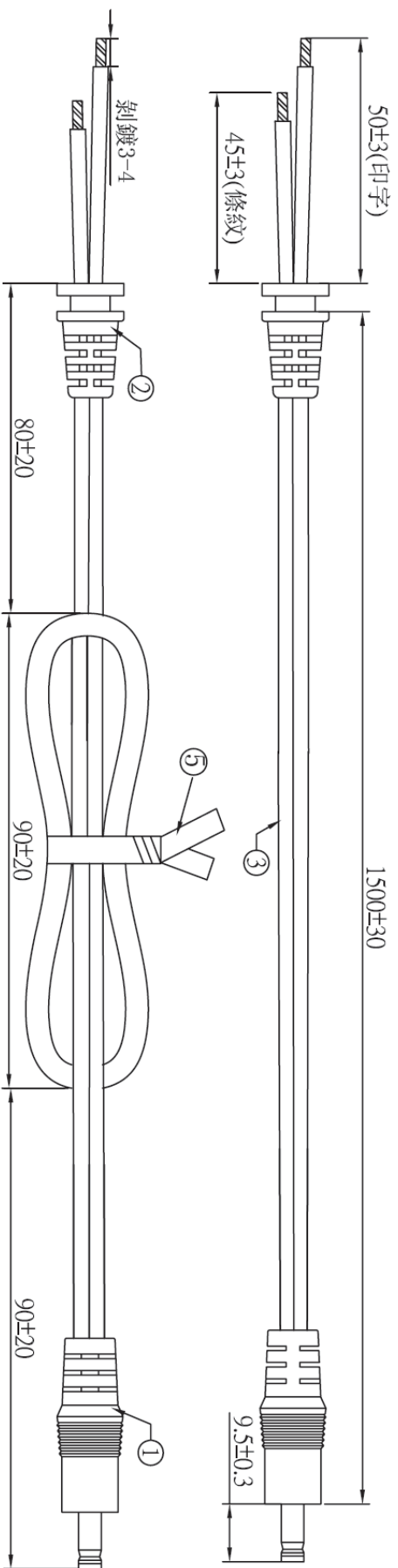
"XXX"

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.

**Label Part No. : 9443019393**

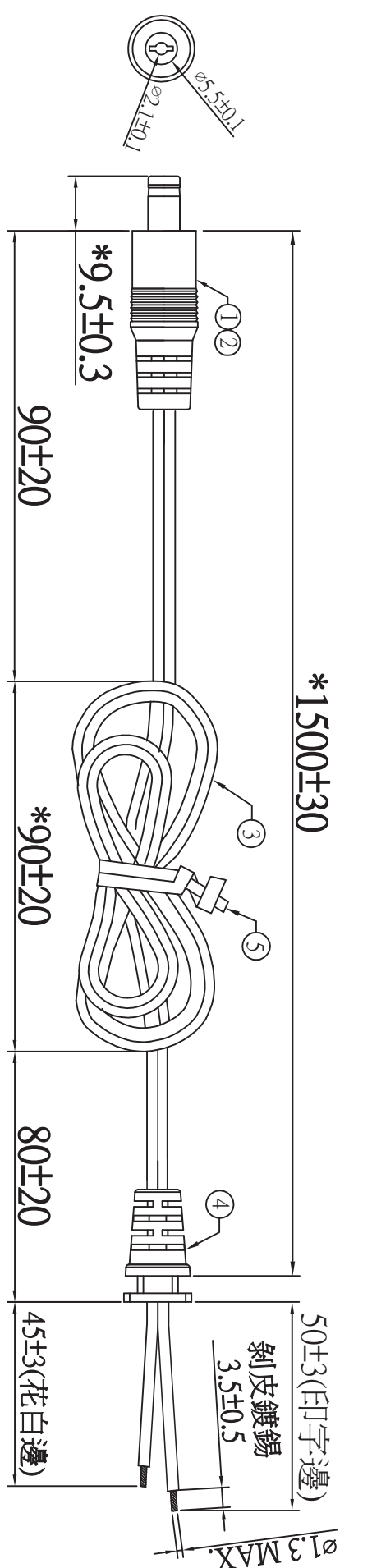


" "	" "
條紋	印字

**注意:此圖面所需材料符合"ROHS"標準**

- ① 5.5\*2.1\*23 音叉車溝黑色半邊 (YY-PD-00186), 外模 P-184 號模 (二次成型), 用料外 PVC60P 黑色 (YY-PV-00009)
- ② SR-101 號模, 用料 PVC60P 黑色 (YY-PV-00009), 吊重: 1 米 / 20 磅 / 60 秒
- ③ UL 2468 20AWG(0.16\*26) BK OD: 1.9\*3.8 (YY-DC-00164) 裁線長度: 1560±10/-0
- ④ PE 有鐵芯 紮帶 10CM 黑色 (YY-ES-00001)
- ⑤ 絕緣阻抗: 20Ω, 導通阻抗: 1.5Ωmax
- ⑥ 單位: MM

料號 R44M1915013		制圖 劉鋒
客戶		
版次 02	初審	
頁數 01	審核	
	批准	
圖號	日期	2009/06/04
版次 02	內容	SR 尺寸



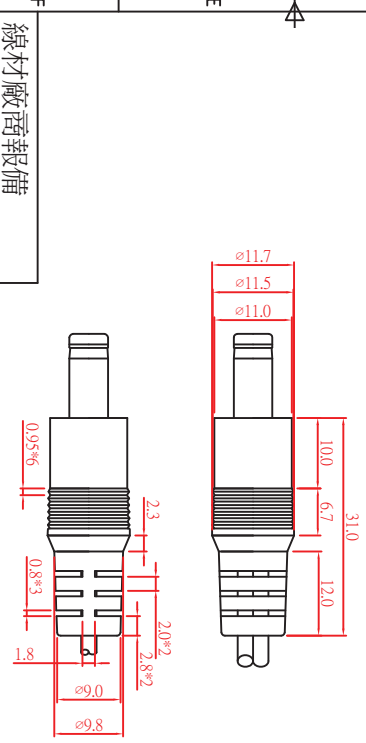
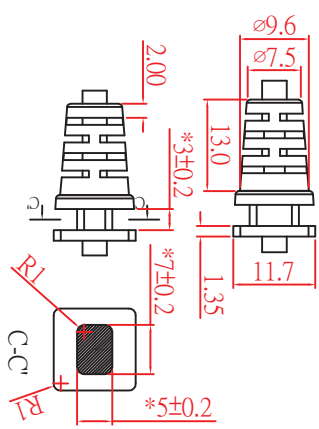
花白邊 ⊕ ⊙ ⊖ 印字邊

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.

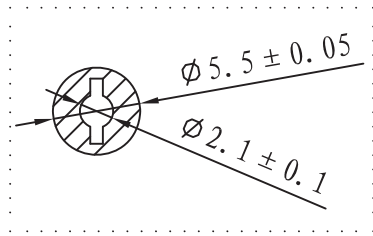
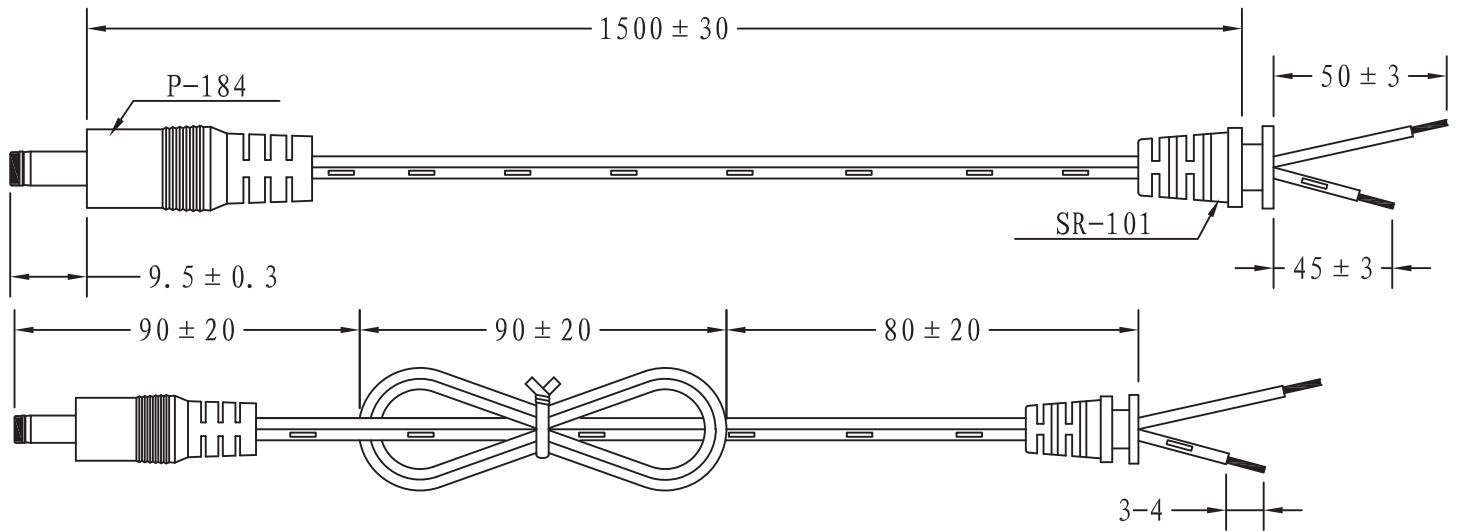
三.搖擺測試:  
電線與PG間吊重200g,40回/分,  
角度±60°往復2000回不完全斷線,  
且外觀無脫落,斷裂等異常.



線材廠商報備		
E72332-4	E328935	
E198417	E315618	
	E204573	
5.	扎帶	PE有鐵絲 黑
4.	S/R	模具編號:DM-SR-3138
3.	Wire	用料:黑色PVC 60P UL2468 20AWG(0.16/26)/2F 黑印字/花白 OD:φ1.9*3.8mm
2.	Plug	模具編號: DM-PG-3377 內/外 用料:內/PE 外/黑色PVC 60P
1.	Pin	φ5.5*2.1音叉車溝絕緣線黑色(彈片內縮0.5mm)
序號	部品	規格

制作者	三角法	單位	比例	份數	1
2013.07.16	3RD ANGLE	mm	SCALE	QTY.	
制圖	校圖	承認	承認	公差	TOLERANCE
DRW.	CHKD.	.APPD.	.APPD.	XX.X	±0.5
				X.X	±0.3
				X.XX	±0.1
江娟	單鵬	王亞琴			
REV.	DATE	變	更	版次	1.0
客戶名					
品名					
DWG.NO.					

图面编号	ADT-Y017	版本	A/0	发行	13-07-23
物料编号	R44M19150141	分发	品管1 资材1 制造1 业务中心1		

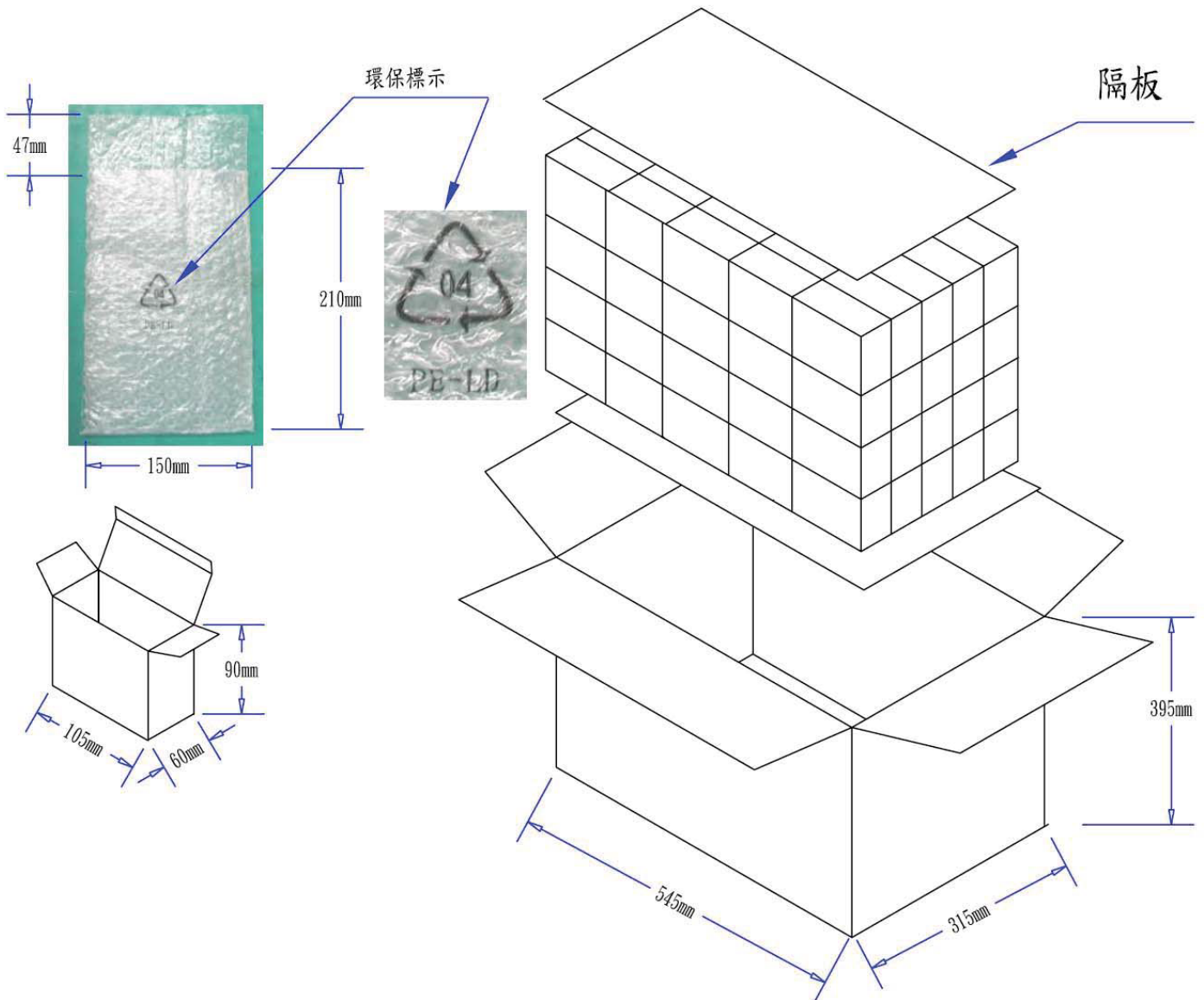


焊接方式  
印条 → ● ← 印字

材料明细					特性要求及注意事项					
序号	材名	物料编码	材料规格	用量	特性要求					
1	线材	A2000093	20#/2C UL2468 黑色线 1.9*3.8 (26*0.16) 80℃ (合力)	1PCS	1. 耐压测试: AC500V, 持续2秒, 漏电流1mA. 2. PL/SR拉力测试: 施力5KG, 持续60秒, 电气性能正常. 3. 线材拉力测试: 施力20磅, 持续60秒, 吊距1米, 电气性能正常. 4. PL/SR摇摆测试: 荷重200g, 角度±60度, 40次/min, 须通过2000最少, 电气性能正常 5. 老化试验: 将产品置于60℃环境中储存24小时, 常温恢复两小时, DC线外观应无变色、破裂、变形、生锈等不良现象 6. 绝缘测试: DC500V 20MΩmin. 7. 导通阻抗: 1.5ΩMAX					
2	铜钉	BTV50233	5.5*2.1*22.5黑色音叉带凹槽	1EA						
3	胶料	C0600013	PLUG 黑色 60P 插头料	g						
		C0600013	SR 黑色 60P 插头料	g						
4	扎带	E0020043	黑色PE有铁芯扎带(100mm)	1PCS				<b>注意事项</b> 1. 单位: mm. 2. 模具图如下一页		

绘制							
审核							
核准		更改依据	标记	处数	变更内容	签名	日期
修改记录							





- PIS18W00007 包裝(FOR 18W, 24W-插牆式)-環保雙面氣泡袋-白盒-100
1. 9550006001 隔板:530\*300\*6mm B=B 2/100
  2. 數量:25\*4=100PCS
  3. 9520006502 外箱:L\*W\*H=545\*315\*395mm K=K 1/100
  4. 9510003502 紙盒:L\*W\*H=105\*60\*90mm 白盒 350P+CE(即C9紙加裱350磅白板紙)
  5. 9540000901 氣泡袋:210\*150\*47mm 無色透明,中間位置印環保標示,短邊單端開口
  6. 成品裝入PE袋后,用小膠紙封口
  7. 外箱,紙盒標注為外徑尺寸
  8. 上述所有材料須符合環保ROHS標準.