

**VH** 华兴变压器制造厂有限公司  
**WAH HING TRANSFORMER MFY. LTD.**

香港九龙官塘兴业街15-17号中美中心A座12-13楼

12&13/F, Blk. A, Chung Mei Centre, 15-17 Hing Yip St., Kwun Tong, Kowloon, Hong Kong

Tel: 852-2341 2297 Fax: 852-2341 5941 E-mail: mkt@wahhing.com.hk

***SPECIFICATION FOR APPROVAL***

**Customer: Ivent Solutions Limited**

**Customer P/N:**

**Customer Rev.:**

**Customer Model No.:**

**Customer ID: I051**

**Wah Hing Model No.: S01811A**

**Wah Hing Rev.: 04**

**Article: SWITCHING POWER SUPPLY**

**Standard: UL/CE/IEC60950, AS/NZS60950**

**Safety No.:**

**Catalog No.: EFS05002400205CE**

**Date: 16-Jan-20**

**Remarks:**

*Please note items listed in page.2 that requires your consent for deviation.*



**Designed/Maker**



**Checked by**



**Approved by**

*Please evaluate the samples, sign this approval sheet and return to*

**WAH HING**

- Approved
- Rejected
- Conditional Approved

**Comments:**

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**Customer Approved by :**

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Signature & Date

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**PRODUCT SPECIFICATION**

**Deviation and History**

*Please note items listed below does not meet your specifications and requires your consent for deviation:*

Item	Customer specification	Suggestion specification

Remarks:





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 *1	04	page13: Change white box label. Page12: Change the label.	Wangpeng	16-Jan-20
 *1	03	1.P13 Adding labels on white boxes	Wangpeng	20-Nov-17
 *3	02	1.P9 Dimensions And Diagram changed 2.P11 SAA plug Dimensions And Diagram changed 3.P12 Nameplate changed	Wangpeng	18-Oct-17
 *2	01	Change page 9 Dimensions And Diagram and page 12 nameplate.	He Liang	10-Jan-17
	00	First issue.	E.P Luo	07-Jan-16
Item	Rev	Description	Sign	Date

History

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## 1.0 INTRODUCTION

The document specifies the AC/DC switching power supply with one output, the total output power is 49.2 W Max.

The unit meet ROHS directive of the European Union.

The unit meet Energy Star VI.

## 2.0 INPUT CHARACTERISTICS

- 2.1 Input Voltage : AC100-240 V Performance guarantee  
Input Voltage Range : AC90-264V
- 2.2 Input Current : 2.0Arms max. @ AC100V full load
- 2.3 Operating Frequency : 50/60 Hz  
Operating Frequency Range : 47-63 Hz
- 2.4 Standby Power :  $\leq 0.15W$  @ AC100-240V rated voltage
- 2.5 Input Fuse : 2A 250Vac
- 2.6 Input Connector : US/EU/UK/AU Plug (Detachable)

## 3.0 OUTPUT CHARACTERISTICS

- 3.1 Output Voltage : DC24.0V $\pm$ 5% @ AC100-240 V at 0A  
: DC24.0V $\pm$ 5% @ AC100-240 V at 2.05A
- 3.2 Output Current  
Rated loading current : 2.05A  
Minimum loading current : 0 A
- 3.3 Ripple and Noise : 240 mV<sub>p-p</sub> max. @ AC100-240 V full load  
Ambient temp. 25°C

The measurement for differential ripple and noise the output will be using oscilloscope, with 20MHz bandwidth. A 10uF electrolytic capacitor and a 0.1uF ceramic capacitor should be parallel with output load.

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3.4 Efficiency : 88 % min. @ AC115V rated voltage  
89 % min. @ AC230V rated voltage

After temperature is saturated, measurement be made at DC cord output terminals.

3.5 Line Regulation :  $\leq 5\%$  @ AC100-240V rated voltage

3.6 Load Regulation :  $\leq 10\%$  @AC100-240V 50/60Hz

3.7 Hold-up Time : N/A

When the power supply turns off the output voltage shall hold up more than 10mS.

3.8 Start up time : 3S max @AC100-240V rated voltage

During turn on output voltage shall not exceed its nominal voltage by more than 10% and all output shall reach their steady state values within 3seconds of turn on

#### 4.0 PROTECTION FUNCTION

4.1 Over-current Protection : 5.0 Amax @AC100-240V 50/60Hz

The power supply shall be hiccupped when any output operating in overload condition (set@ MAX5.0A ) under any line condition for an indefinite period of time the power supply shall be auto recovered when the fault condition is removed

4.2 Short circuit protection :

The power supply shall be hiccupped and no damage shall be occurred when any output operating in over temperature conditions under any line conditions for an indefinite period of time the power supply shall be auto recovered when the fault condition is removed.

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**5.0 ENVIRONMENTAL CONDITION**

**5.1 Non-operation**

5.1.1 Ambient temperature : -20-70 °C

5.1.2 Relative humidity : 10-90 %

The power supply shall be capable of withstanding the above environmental conditions for extended periods of time, without sustaining electrical and/or mechanical damage and subsequently operational deficiencies.

**5.2 Operating**

5.2.1 Ambient temperature : 0-40 °C

5.2.2 Relative humidity : 20-80 %

The power supply shall be capable of operating continuously in any mode without performance deterioration in the above environmental condition.

**6.0 SAFETY AND EMC STANDARD**

6.1 Safety standard : UL/CE/IEC60950,AS/NZS 60950

6.2 EMC Standard : EN55022 class B

6.3 Immunity to electrostatic discharge(ESD) according : EN61000-4-2

6.4 Immunity to radiated electromagnetic field according : EN61000-4-3

6.5 Immunity to electrical fast transients(burst) according : EN61000-4-4

6.6 Surge capability according : EN61000-4-5

6.7 Immunity to conducted disturbances,induced by radio frequent fields according : EN61000-4-6

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6.8 Immunity to voltage dips short interruptions and voltage variations,  
test according : EN61000-4-11

6.9 Dielectric strength

Primary to secondary : DC4242V 60S Cut off current 5mA

6.10 Insulation Resistance

Primary to secondary : DC500V 60S 10MΩ MIN  
3 Seconds for production

7.0 RELIABILITY AND QUALITY CONTROL

7.1 Burn-in

7.1.1 Burn-in Ambient temperature : 40 °C

7.1.2 Burn-in Time : 4 hr.

AC source 230Vac/50Hz, 80-100% loading.

7.2 Drop Test

Dropped the specimen from 3 ft.(914mm) height, 1 times each for a different sides onto a concrete floor at least 64 mm thick and covered with a 3.2 mm thick vinyl tile. There shall be no problem on appearance, structure, performance and safety.

8.0 MECHANICAL

8.1 Case

8.1.1 Case Material : Plastic

8.1.2 Case Dimension : L86.5\*W51.34\*H37.0mm

8.1.3 Case Colour : Black

8.2 Weight(Adaptor unit) : 295 g (about)

8.3 Input AC Cable

8.3.1 Input plug type : US/EU/UK/AU Plug (Detachable)

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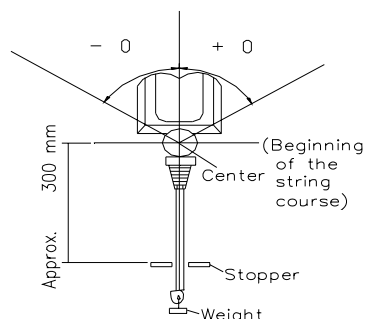
8.4 Output terminal

8.4.1 Output cord : UL2468 AWG20 1200±40mm  
out of case

8.4.2 Output plug type : 1.4\*6.5\*9.5 mm, straight female

8.4.3 Output plug center polarity : + (Positive)

8.4.4 Flexibility test : SR: 1200 Cycles, loading 200g



DC Plug: 600 Cycles, loading 200g

Bend at rate 20 time/min. and at an angle of  $\pm 60^{\circ}$ . Number of broken wire Disconnection rate of the wire shall be 30% or less. and no abnormality on appearance.

8.4.5 Pull test

Fixed both DC cord plug and bush and a static load of 20P shall be applied and sustained for 60s. There shall be no abnormality on the DC cord.

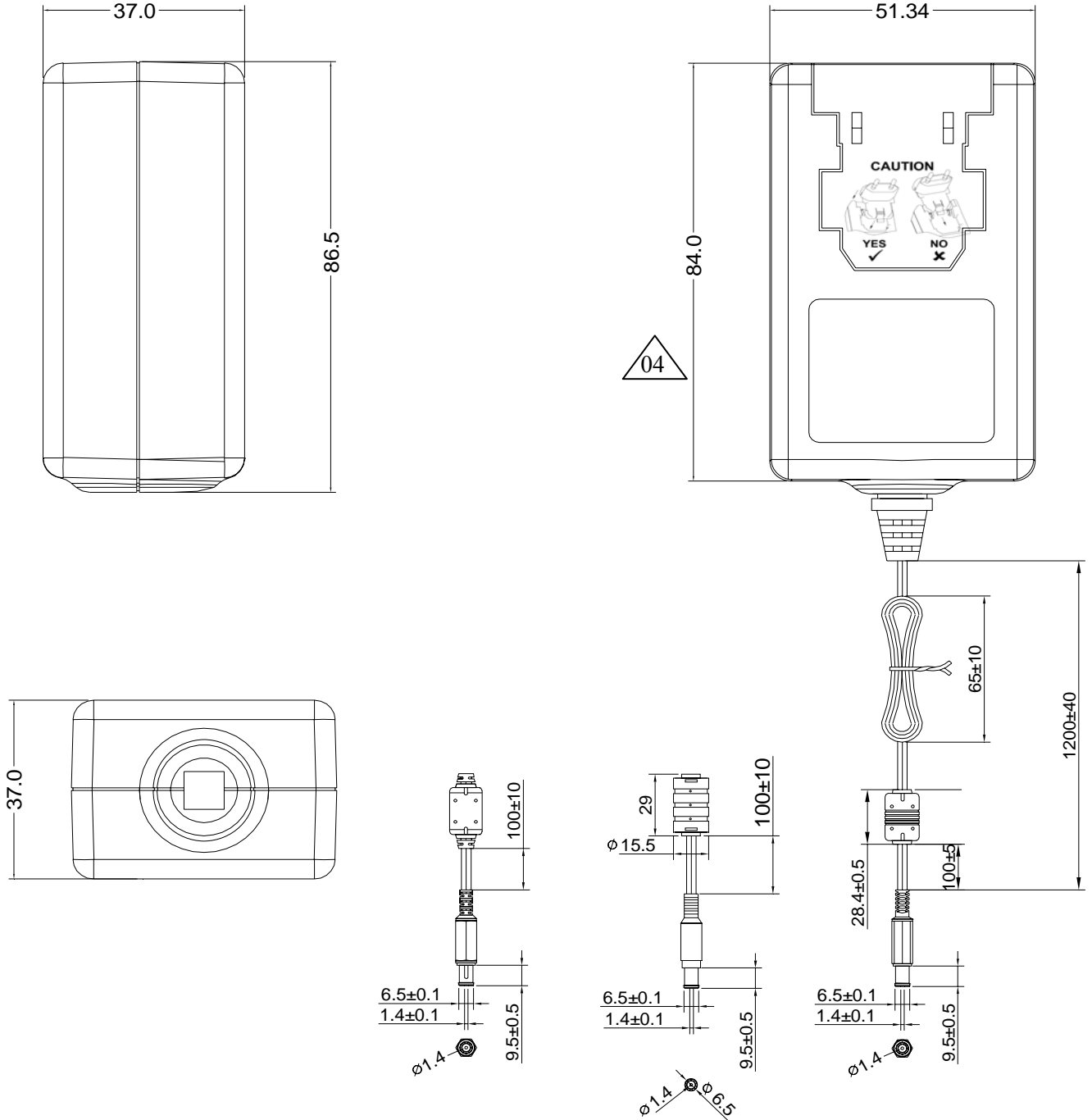
Customer P/N:

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8.5 Dimensions And Diagram



**Notice:**

1. Unit: mm
2. The otherwise tolerance is follows: ±1.0

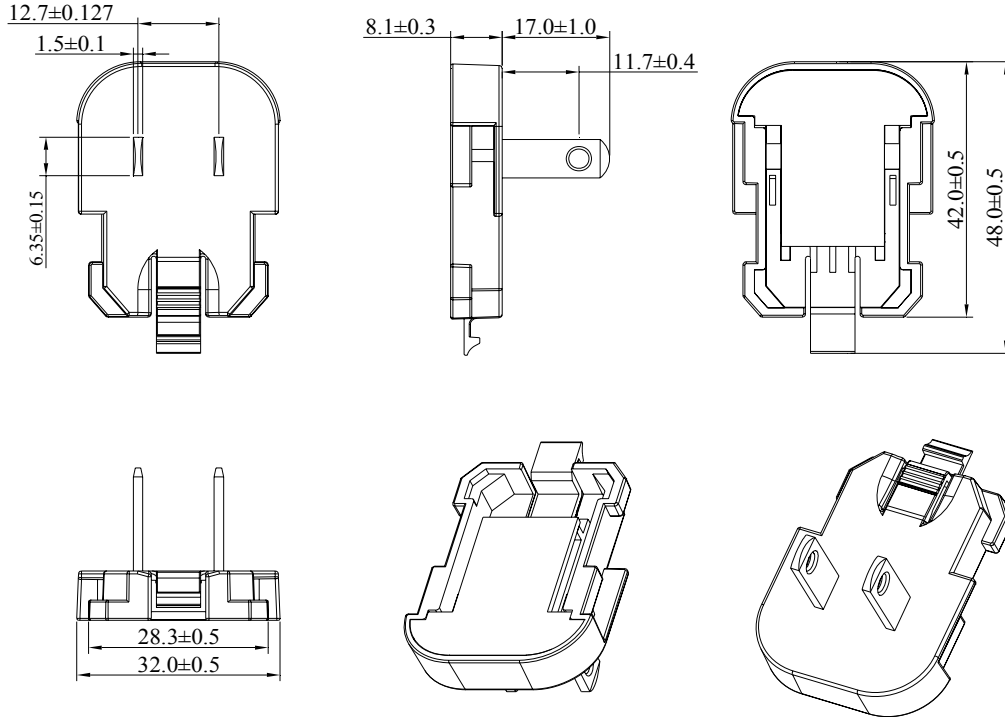
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Wah Hing Model No.: S01811A

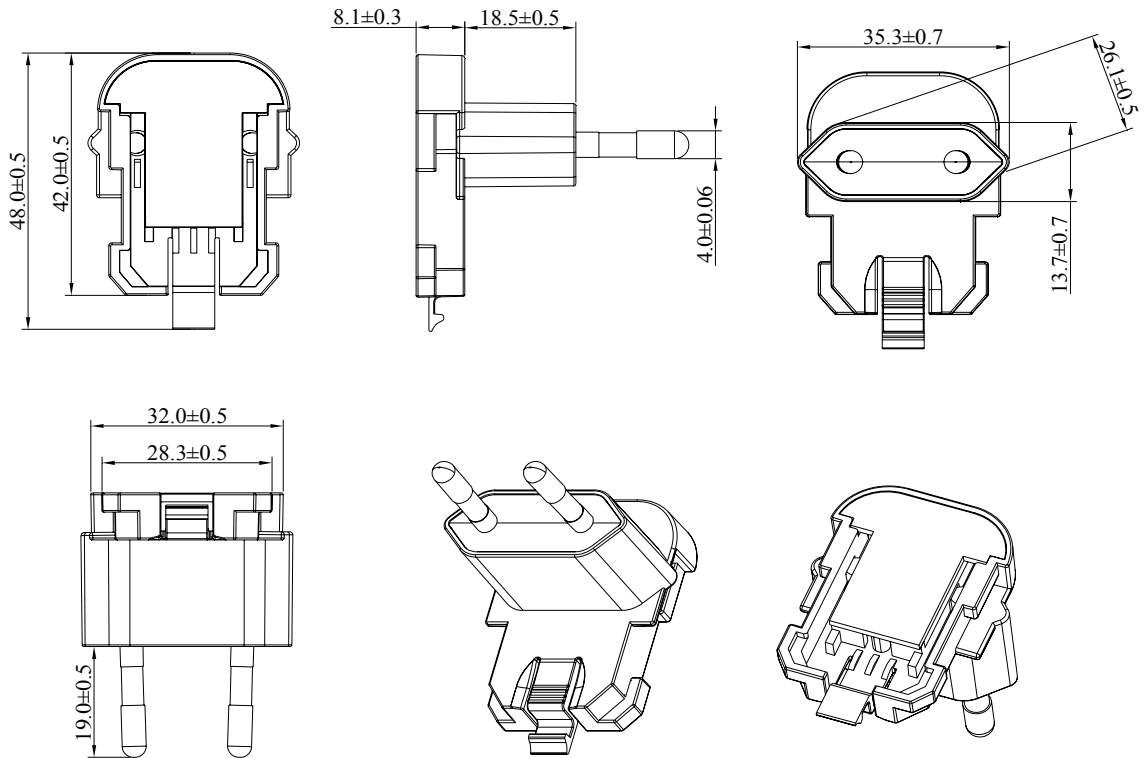


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8.5.1 UL Plug Dimensions And Diagram



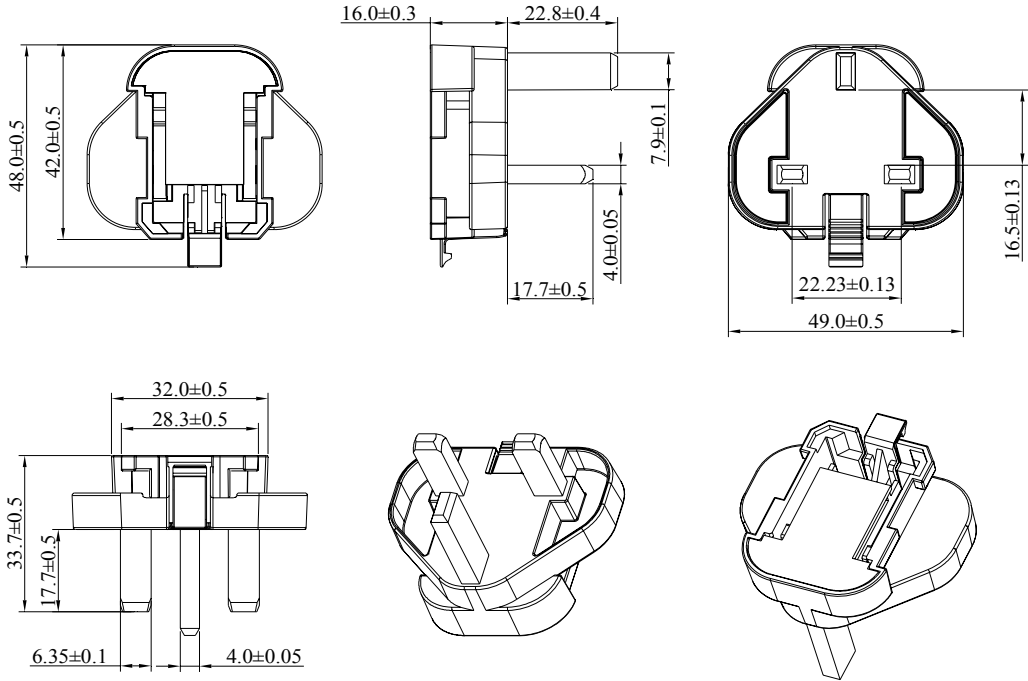
8.5.2 VDE plug Dimensions And Diagram



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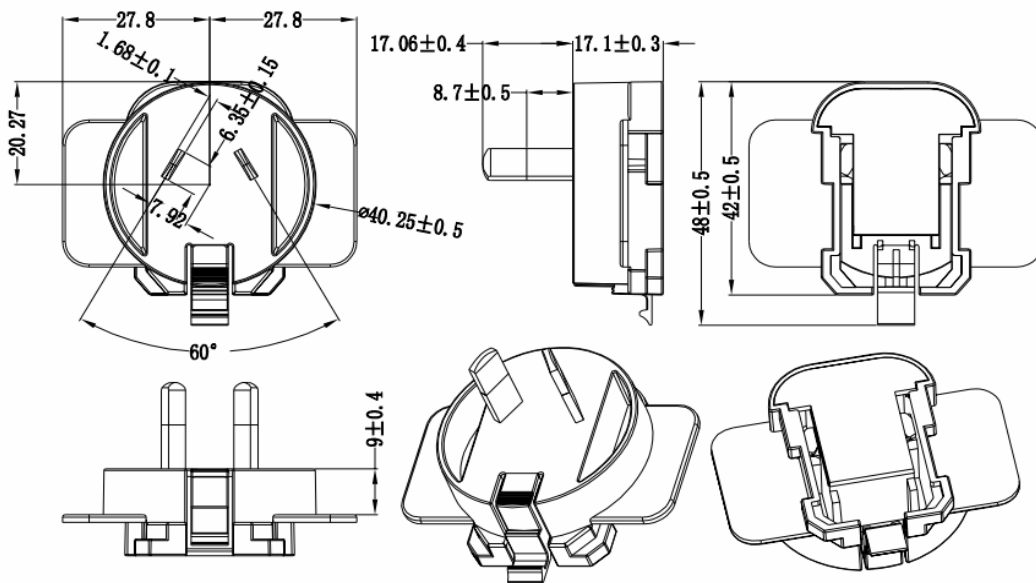
Wah Hing Model No.: S01811A

8.5.3 BS plug Dimensions And Diagram



8.5.4 SAA plug Dimensions And Diagram

02



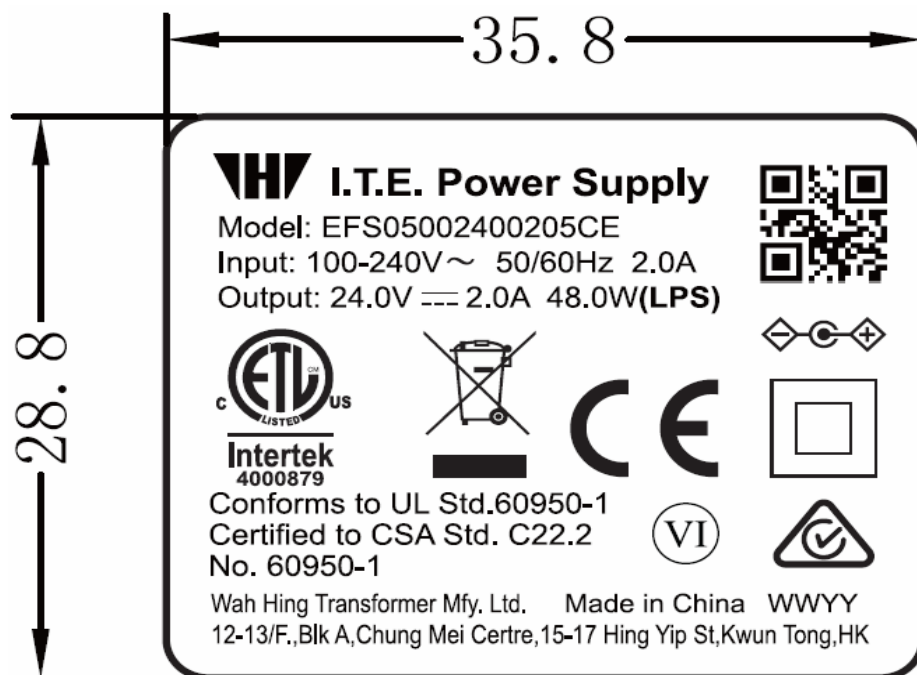
Customer P/N:

Wah Hing Model No.: S01811A

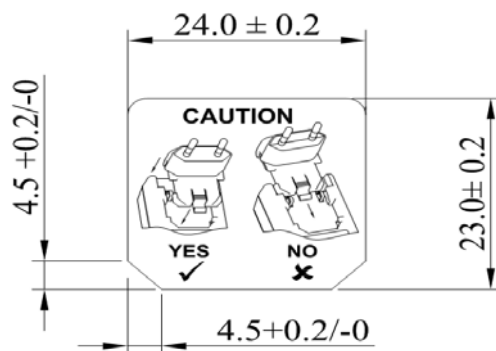
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9.0 PROPOSED ARTWORK MARKING

04



WW=week, YY=yeay



Notice:

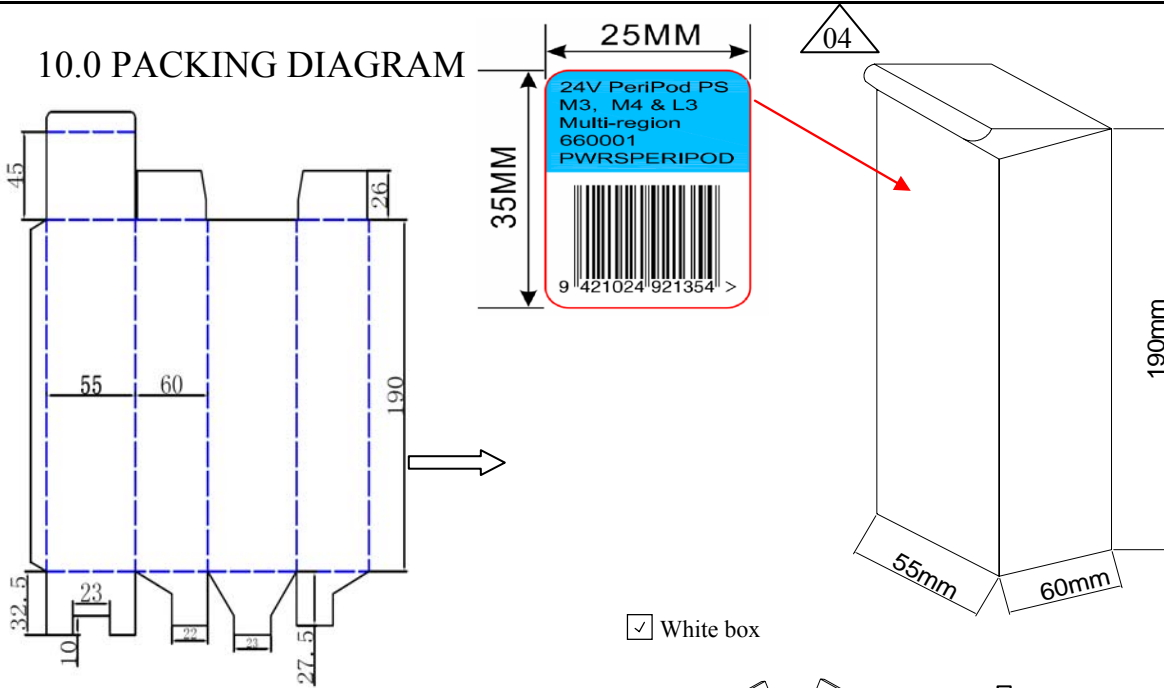
1. Unit : mm
2. Method : Using laser printing.  
 (alternate) : Polyester, Black, 0.2 mm thick,  
 Letter in white, background in black
3. Caution label : Using laser printing.
4. The otherwise tolerance is follows:  $\pm 0.2$

Customer P/N:

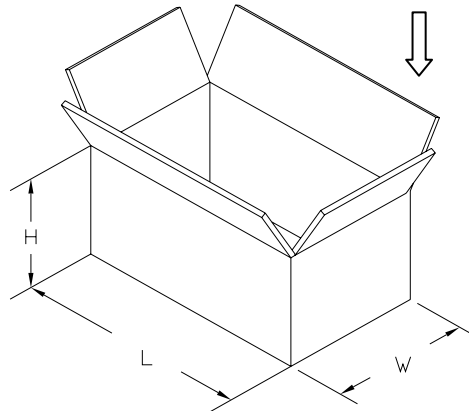
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**10.0 PACKING DIAGRAM**



White box



**Packing description:**

	L	W	H
Size (cm)	45	39	25
Tolerance	+2/-0	+2/-0	+2/-0
QTY (pcs)	64		
G. W. (Kg)	18.5		

**Remarks:**

- Storage condition:  
 Temperature: -20°C ~ 70°C  
 Relative humidity: 10% ~ 90%
- Storage time: 6 months
- Antistatic no requirement
- Please advise if any comment on packing information, Otherwise, this information will apply in production.

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## 11.0 APPENDIX

### 11.1 Test Report

Sample Testing Report (Data)									
(样品测试报告/内部测试用)									
Wah Hing Model No.: 华兴样品型号:		S01811A	Product Type: 产品名称:		Switching Mode Power Supply	Rated value: 额定输入与输出:		Input: AC 100-240VAC Output: DC 24V 2.05A	
Detail 测量详情		AC connector: 输入插头:	可转换	Revision: 版本:	00	Sample Quantity: 样品数量:		100PCS	
Descriptions 测量项目	Specification 标准范围	Measurement Reading 测量数据 (Sample No. 样品编号)					Result 测量结果	Comments 建议	
		1	2	3	4	5			
<b>1. Hi-Pot test</b>									
Primary to secondary 4242 VDC 60 S	< 5 mA	0.00	0.00	0.00	0.00	0.00	ok		
<b>2. Output voltage (V)</b>									
Vin: 100 VAC 60Hz, Load: 2.05A	22.8-25.2V	23.73	23.50	23.64	23.51	23.71	ok		
Vin: 100 VAC 60Hz, Load: 0A	22.8-25.2V	24.03	23.80	23.93	23.81	24.01	ok		
Vin: 240VAC 50Hz, Load: 2.05A	22.8-25.2V	23.74	23.50	23.64	23.49	23.70	ok		
Vin: 240VAC 50Hz, Load: 0A	22.8-25.2V	24.03	23.81	23.94	23.79	24.00	ok		
<b>3. Line regulation (%)</b>									
Vin: 100-240 VAC, Load: 0A	<5%	0.00%	0.04%	0.04%	0.08%	0.04%	ok		
Vin: 100-240 VAC, Load: 2.05A	< 5 %	0.04%	0.00%	0.00%	0.08%	0.04%	ok		
<b>4. Load regulation (%)</b>									
Vin: 100 VAC, Load:0 - 2.05A	≤ 10%	1.25%	1.25%	1.20%	1.25%	1.25%	ok		
Vin: 240 VAC, Load:0 - 2.05A	≤ 10%	1.20%	1.29%	1.25%	1.25%	1.25%	ok		
<b>5. Input current (A)</b>									
Vin: 100 VAC 60Hz, Load: 2.05A	≤1.2A	0.89	0.88	0.89	0.89	0.89	ok		
Vin: 240VAC 50Hz, Load: 2.05A	≤1.2 A	0.45	0.44	0.44	0.44	0.44	ok		
<b>6. Ripple and noise (mVp_p)</b>									
Vin: 100 VAC 60Hz, Load: 2.05A	≤ 240mVp_p	74	72	70	66	68	ok		
Vin: 240 VAC 50Hz, Load: 2.05A	≤ 240mVp_p	62	64	66	64	62	ok		
<b>7. Standby power (W)</b>									
Vin: 115 VAC 60Hz, Load:0A	≤ 0.15W	0.09	0.09	0.09	0.09	0.09	ok		
Vin: 230 VAC 50Hz, Load:0A	≤ 0.15W	0.11	0.11	0.11	0.11	0.12	ok		
<b>8. Average Efficiency (%)</b>									
Vin: 115 VAC 60Hz, Load: 2.05A	≥ 88.0%	88.69%	88.64%	88.77%	88.66%	88.56%	ok	After laod 2.05A 30 minutes Burn-in test load:2.05A, 1.5375A, 1.025A, 0.51 25A. efficiency.	
Vin: 230 VAC 50Hz, Load: 2.05A	≥ 89.0%	89.19%	89.10%	89.29%	89.13%	89.16%	ok		
<b>9. OCP test (A)</b>									
Vin: 100 VAC 60Hz	≤5.0A	3.19	3.30	3.25	3.25	3.23	ok		
Vin: 240 VAC 50Hz	≤5.0A	3.67	3.84	3.76	3.79	3.73	ok		
<b>10. Output short protection</b>									
Vin: 100 V 60Hz, Load: short	Pin ≤ 8W	3.30	3.40	3.50	3.70	3.60	ok		
	Output voltage automatic recovery	ok	ok	ok	ok	ok			
Vin: 240 V 50Hz, Load: short	Pin ≤ 8W	4.70	4.50	4.70	4.60	4.60	ok		
	Output voltage automatic recovery	ok	ok	ok	ok	ok			
END									
<b>Remarks:</b> * Ripple and noise test: Output plug parallel connection 10uF/50V and 0.1uF/50V capacitors.The bandwidth setting of oscilloscope should be 20MHz.									
Prepared By: 制作人:		Checked By: 核查人:		Approved By: 批准人:					
Date(日期): 2017.1.11		Date(日期): 2017.1.11		Date(日期): 2017.1.11					

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