Approval Sheet

AC/DC Adapter

Customer : TPS

Customer Part No.:2K11S1170

Model No .: PA1008-1HE

Powertron Part No.: PA1008-050HEB050

Description: Input : 100V~240Vac

Output : DC5V/500mA

Output Cable:UL1185 22AWG, plug: 5.5*2.1*12mm(內含 103 電容) Barrel straight

Approval No.: PA1008-050HEB050-181-V0-A3

Customer	**Approved**	**Checked**	**Drawing**	**Issued**
Powertron	**Approved**	**Checked**	**Engineer**	**Issued**
	生技 2012.01.31 張勝程	品保 2012.01.31 麥曉遙	主管 2012.01.31 陳展鴻	工程 2012.01.31 黎靜琴
	ChangShengCheng	**MaiXiaoYao**	**ChenZhanhong**	**LiJingQin**

Revision History

Approval No.	Description	Rev. date	Page	Rev No.
PA1008-050HEB050-181-V0	Draft spec. released	2011/10/19	1/17~17/17	A0 (S1109022B)
PA1008-050HEB050-181-V0	修改 DC PLUG	2012/01/31	1-2-10-14	A1
PA1008-050HEB050-181-V0	Label1	2012/8/27	14	A2
PA1008-050HEB050-181-V0	Update3.4	2013/11/4	4	A3

Contents

1. DESCRIPTION

This product is an 2.5W AC to DC plug-in, Class II, single output power device with constant voltage sources.

2. SCOPE

This specification is applied as description of electrical & mechanical characteristics for PA1008.

3. ELECTRICAL CHARACTERISTICS

3.1 Input Characteristics

3.1.1 AC input voltage
Rated input voltage: 100 ~ 240Vac
Operating input voltage range: 90~ 264Vac
3.1.2 AC input frequency
Rated Input frequency: 50/60 Hz
Operating input frequency range: 47~63 Hz
3.1.3 AC input current
Maximum: 300mA
3.1.4 AC inrush current
Inrush current will be less 20A at input 115Vac, 40A max/230VAC
cold start at input voltage 90-degrees cut angle for sine wave with full load.

3.2 Output Characteristics

3.2.1 Output voltage
Output voltage :DC5V±5%
3.2.2 Output current
Output current: 0~500mA

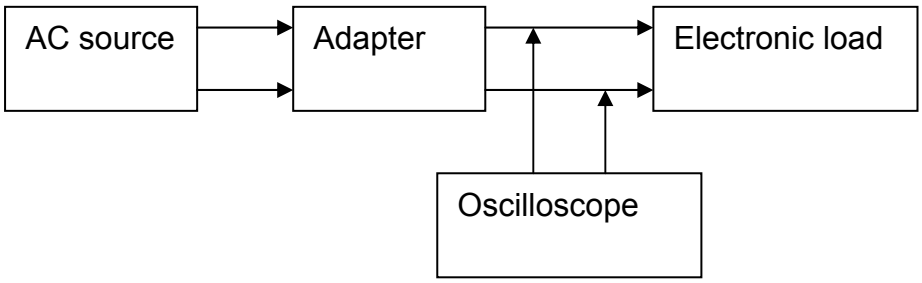
3.3 Efficiency

3.3.1The efficiency of power supply will be higher than 63% at input voltage range with average value.
3.3.2 Meet CEC regulation level V.

3.4 Ripple & Noise

Ripple limit: Output voltage 20 mV Max. based on load 500mA.
Noise limit: Output voltage 50mV max. based on load 500mA.
.

Test condition: This is measured over bandwidth of 20MHz at the power supply output connector a 10μF electrolytic capacitor in parallel with a 0.1μF ceramic capacitor in 5 minutes after the supply starts up.



3.5 Turn on delay time & Rise time

3.5.1 Turn-on delay time

At turn on moment, From AC input turn on to output voltage rise to 90%, The time will less than 2Secs. At input voltage range with full load.

3.5.2 Rise time

At turn on moment, The output voltage from 10% to 90% rise time will be less than 10mSecs. At input voltage range with full load.

3.5.3 Over shoot will be less than 8% of normal voltage value.

3.5.4 Hold up time

At turn off moment, From AC input turn off to output voltage fall to 90%, The time will be more than 10mSecs. At input voltage range with full load.

3.6 Protection

3.6.1 Short circuit protection

When output short circuited, output voltage peak value will be less rating output voltage, AC input peak power will be less 2W at moment and with auto- recovery function

3.6.2 Over current protection

Over current protection point will be less than output current 200% with auto-recovery function.

3.6.3 Over voltage protection

Over voltage protection point will be less than output voltage 120%

4 Safety & EMC requirement

Safety

Safety Refer Standards

CB scheme IEC60950-1:2005 (2nd Edition)

EMI

CE EN55022:2006(Class B) EN55024:1998/A1:2001/A2:2003

FCC ANSI C63.4(2003) Class B

VCCI CISPR 22:1997+A1:2000 Class B

SMA CISPR 22:1997+A1:2000 Class B

Australia C-Tick (AS/NSZ60950)

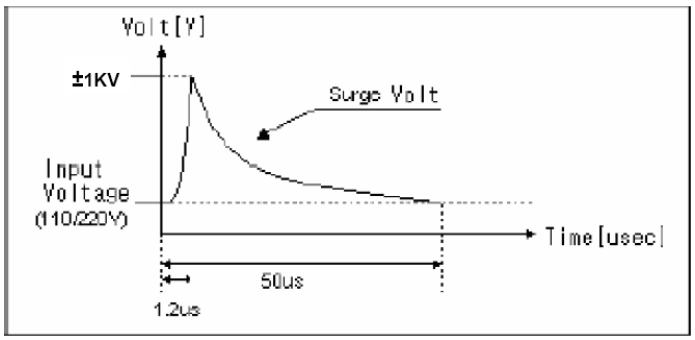
Referring Standards		Test Specification	
ESD	IEC61000-4-2	Contact	±4KV
		Air	±8KV
EFT	IEC61000-4-4	1KV on AC power line.	
SURGE	IEC61000-4-5	1KV on differential mode.	

4.1 Surge Test

There must be no damage to the adaptor and it must continue to operate and meet all specifications after surge test.

Surge voltage condition: Full Load, voltage(±1KV)

Ring wave (0.5us/100KHz), -. Impulse(1.2/50us)



4.2 Leakage Current

MAX Current: under 250uA

Y-capacitor between primary & secondary circuit is less than 3300pF.

4.3 HI-POT

Between primary to secondary: 3000Vac 50Hz for one minute,
In Production line shall be more than 2 sec
Test current will be less 10mA
Adapter is no damage after completion of the test

4.4 Insulation Resistance

Adapter will withstand 500VDC 50Mohms between input or output plug to plastic case

5. Reliability

5.1 MTBF

40,000 hour Power on at 25 ℃

5.2 Temperature Rise (Delta-T).

Temperature rise will be less than 85℃ and case temperature rise will be less than 35 ℃ at normal AC input / DC output full loading
Environment temperature 25 ± 1℃

5.3 Burn-in

100% Burn - in at full loading and 4 hours at 40 +/- 5℃ Environment temperature

5.4 Drop Test

The adapter will be subjected to 3 drops from 1 M height on a hard wooden surface.

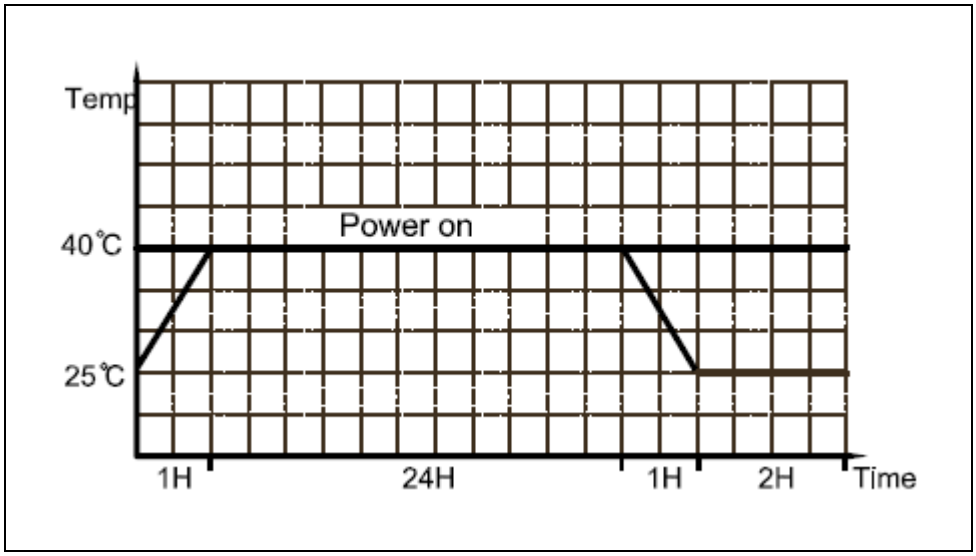
5.5 AC input ON/OFF test (Dip test)

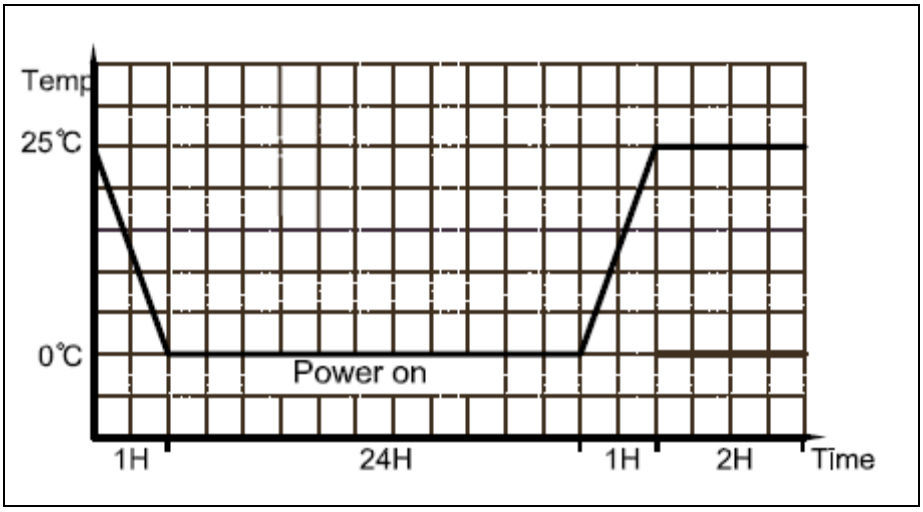
The adapter must meet all specifications after test.
AC input voltage: 115/230Vac
AC input ON/OFF cycle: min 5secs/ 5secs
AC input voltage drop: 30%/500msecs
AC input ON/OFF times: 10,000

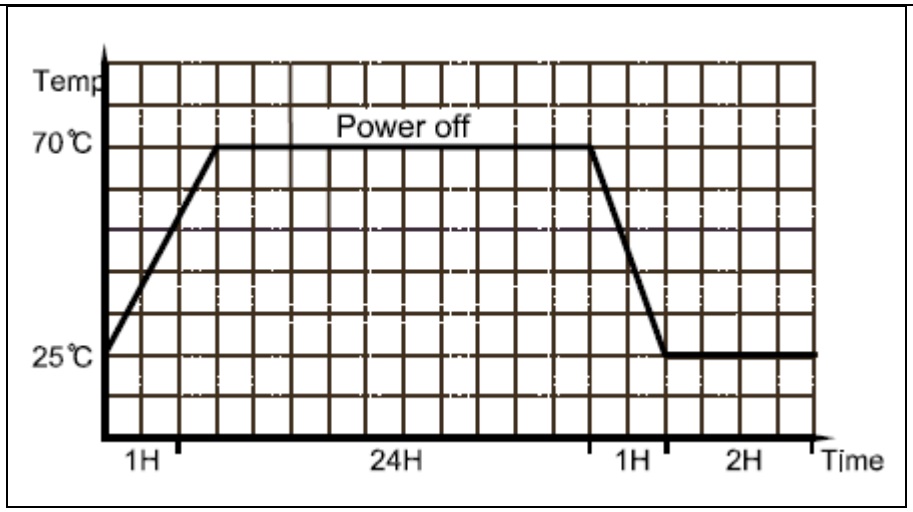
6. ENVIRONMENTAL CHARACTERISTICS.

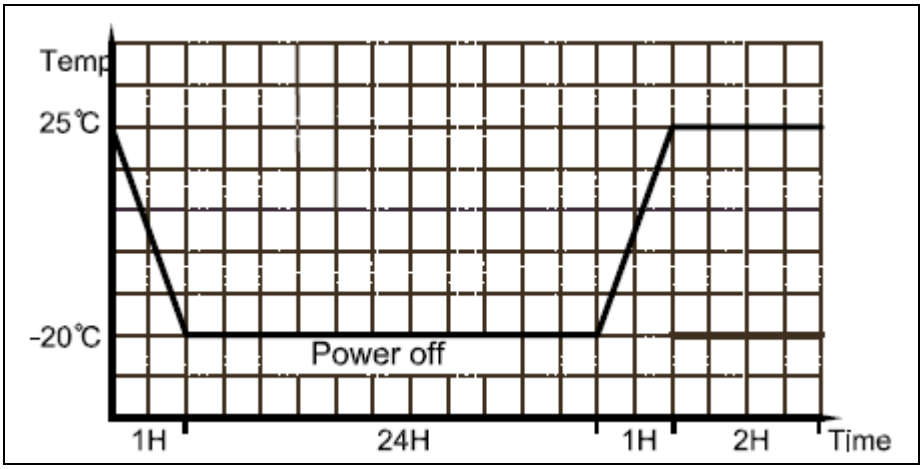
6.1 Temperature

The adapter must meet all specifications after test.
Unit operating temperature range: 0 to 40℃
Storage temperature range: -20 to 70℃









6.2 Max Temperature

The adaptor must meet all specifications after test.
Condition:
Measure the temperature continuously for more than 3 hours with max load.

6.3 Humidity

The adapter must meet all specifications after test.
Operating humidity: Max 75%RH
Storage humidity: Max 95% RH

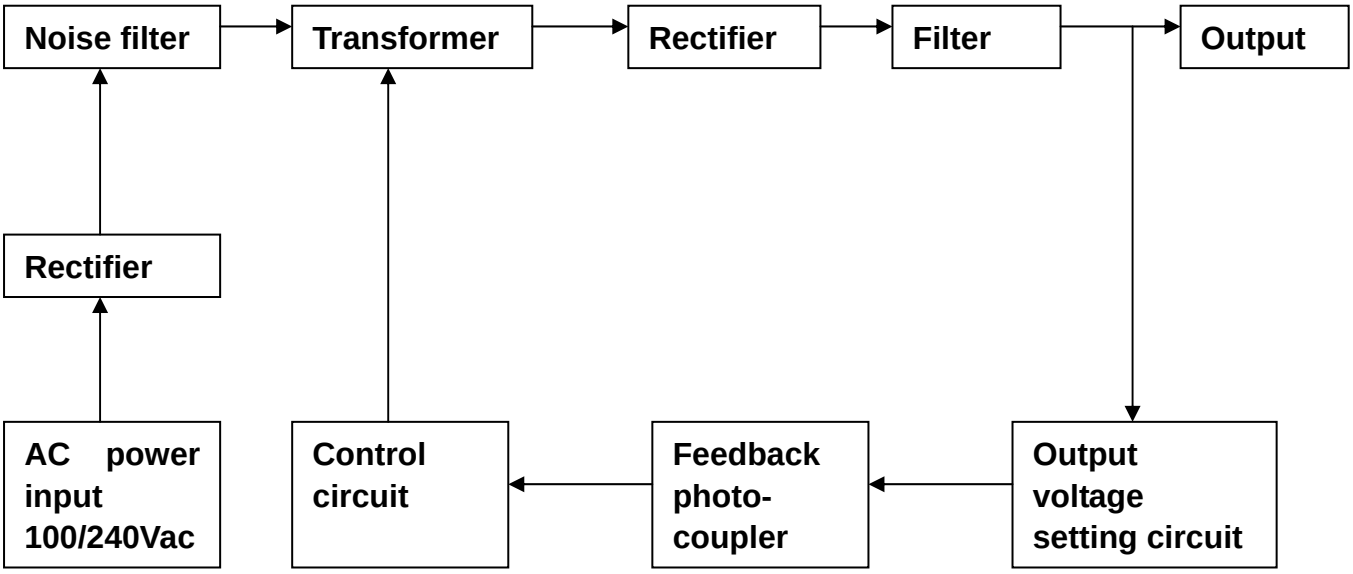
6.4 Altitude

The adapter must meet all specifications after test.
Installation : Sea level up to +10,000 feet

Storage : Sea level -100 to +10,000 feet

7 Block Diagram & Schematic Drawing

7.1 Block Diagram



8 Mechanical

8.1 Plastic Case material: “PC+ABS”.
8.2 Physical Size: 59mm(L) X 27mm(W) X40mm(H).
8.3 Output Cable: UL1185, 22AWG, L=1200mm with plug: 5.5*2.1*12mm(內含 103 電容) Barrel straight

8.4 AC input with 2 pins plug-in type.

9 SAMPLE TEST REPORT

9.1. Burn - In Test

Test Purpose:
To check reliability of the products.

Test Condition:
Ambient Temperature: 40 +/- 5℃
1. Vin = 115V/60Hz Full load 4hours
2. Vin = 230V/50Hz Full load 4hours

Criteria:
There should not be any abnormal found after the testing.

Test result: ■ Pass □ Fail

	No.	1	2	3	4	5
Test Data	1	OK	OK	OK	OK	----
	2	OK	OK	OK	OK	----

9.2. COMBINE REGULATION TEST

Test Purpose:
To check if the Total regulation and ripple noise meets the specification.

Test Condition:
Ambient Temperature: 25℃

1. Vin = 90V/47Hz Full load
2. Vin =110V/50Hz Half load
3. Vin = 132V/53Hz No load
4. Vin = 180V/57Hz Full load
5. Vin = 230V/60Hz Half load
6. Vin = 264V/63Hz No load

Criteria:
Output Voltage Range:4.75V ~5.25 V
Ripple Range: 20 mV Max(Ripple≦20m V Noise≦50m V)

Test result: ■ Pass □ Fail

	Output Voltage (V)						Ripple & Noise (mV)					
	No.	1	2	3	4	5	No.	1	2	3	4	5
Test Data	1	5.07	5.07	5.06	5.06	----	1	17.2	16.8	17.4	17.6	----
	2	5.11	5.11	5.11	5.10	----	2	14.8	14.6	14.8	14.6	----
	3	5.16	5.16	5.16	5.16	----	3	8.02	8.0	7.6	7.2	----
	4	5.06	5.07	5.06	5.06	----	4	16.4	16.2	16.8	16.2	----
	5	5.11	5.11	5.11	5.11	----	5	13.2	14.2	14.2	13.8	----
	6	5.16	5.16	5.16	5.16	----	6	8.0	7.6	7.6	7.2	----

9.3. Efficiency Test

Test Purpose: To check if the power supply efficiency meets the specification.						
Test Condition: Ambient Temperature: 25℃ 1. Vin =115V/60Hz Average active efficiency 2. Vin = 230V/50Hz Average active efficiency 3. Vin =115V/60Hz N0 load Input Power 4. Vin =230V/50Hz N0 load Input Power						
Criteria: Efficiency Range: 63% Min Input Power:0.3W Max						
Test result: ■ Pass □ Fail						
Test Data	No.	1	2	3	4	5
	1(%)	69.55	69.32	69.39	69.35	----
	2(%)	69.44	68.14	68.05	68.22	----
	3(W)	0.1	0.1	0.1	0.1	----
	4(W)	0.1	0.1	0.1	0.1	----

9.4. OCP Test

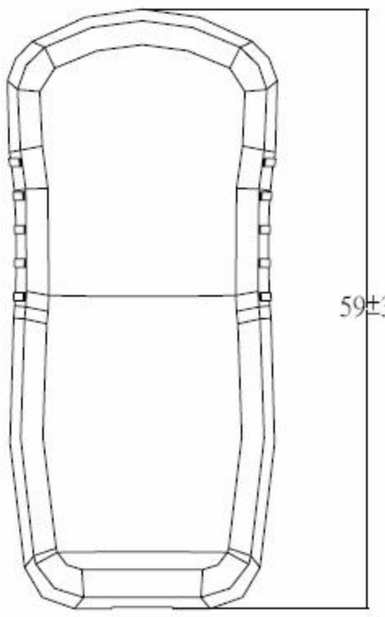
Test Purpose: To check max. over current meets the specification.						
Test Condition: Ambient Temperature: 25℃ 1. Vin =115V/60Hz 2. Vin = 230V/50Hz						
Criteria: Over Current Range: Max 1.0A Power supply shall shutdown for over current test, and it shall recover automatically when the protection removes.						
Test result: ■ Pass □ Fail						
Test Data	No.	1	2	3	4	5
	1	0.72	0.72	0.73	0.71	----
	2	0.73	0.74	0.75	0.74	----

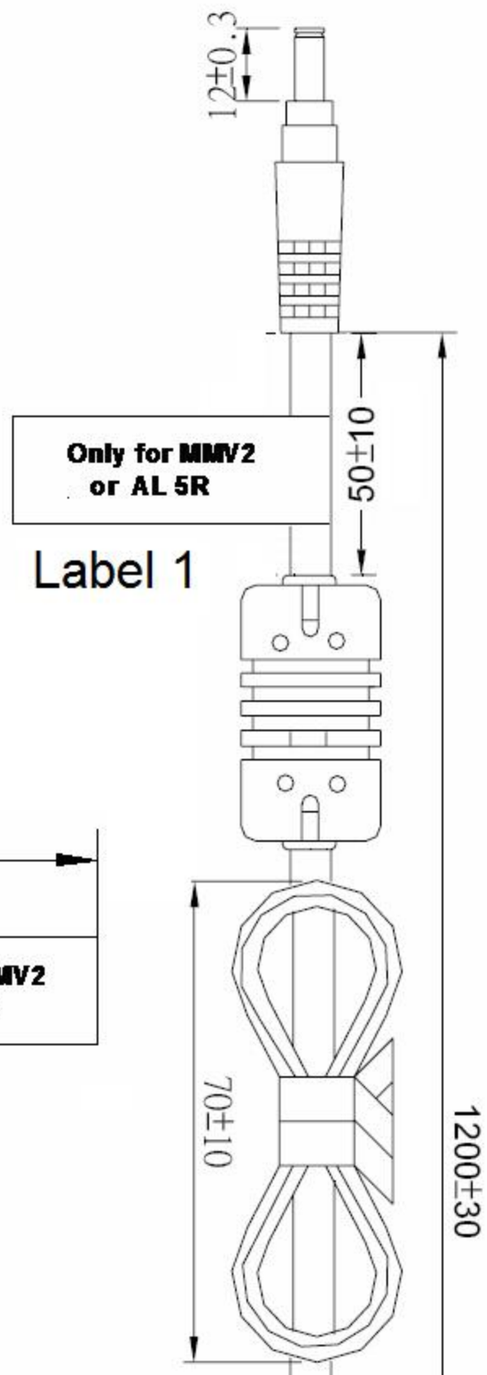
9.5. Short Circuit Test

Test Purpose: To verify that no damage, fire or safety problem will result from a short circuit.						
Criteria: Power supply shall recover automatically. The maximum short-circuit energy in output short not exceed 2VA.						
Test Condition: Ambient Temperature: 25℃ 1. Vin =115V/60Hz 2. Vin = 230V/50Hz						
Test result: ■ Pass □ Fail						
1Test Data	No.	1	2	3	4	5
	1	1.1	1.1	1.1	1.1	----
	2	1.8	1.8	1.8	1.8	----

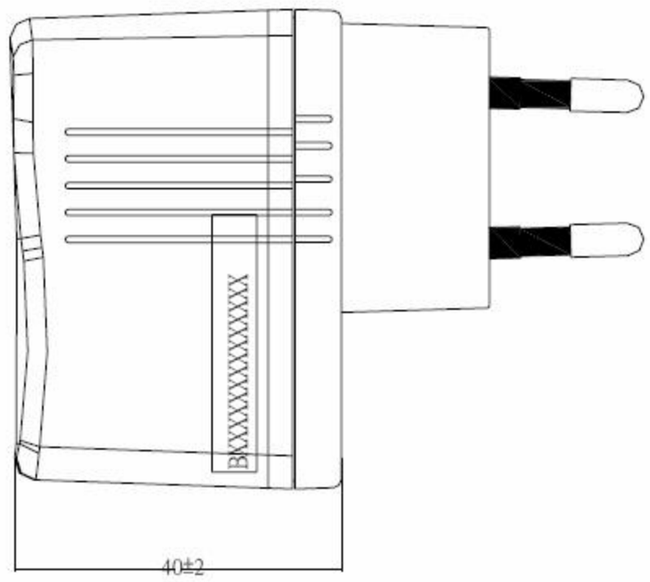
9.6. Hi-Pot Test

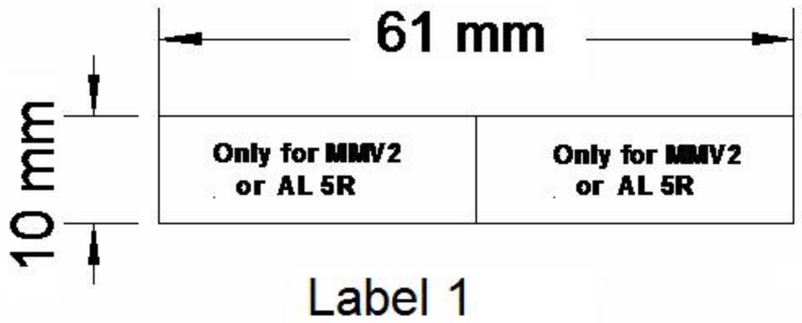
Test Purpose: To check if Hi-Pot characteristic meet specification requirement.						
Test Condition: Ambient Temperature: 25℃ 1. H/P TEST: 3000VAC 10.0mA(Max) 3Seconds 2. I-R TEST: 500VDC 50MΩ(Min) 3Seconds 3. R-Ω TEST: 100mΩ(max) 25A						
Criteria: Power supply should experience no damage.						
Test result: ■ Pass □ Fail						
Test Data	No.	1	2	3	4	5
	1	0.62	0.65	0.66	0.65	----
	2	$1.1x10^3$	$1.28 x10^3$	$1.27 x10^3$	$2.3 x10^3$	----
	3	----	----	----	----	----



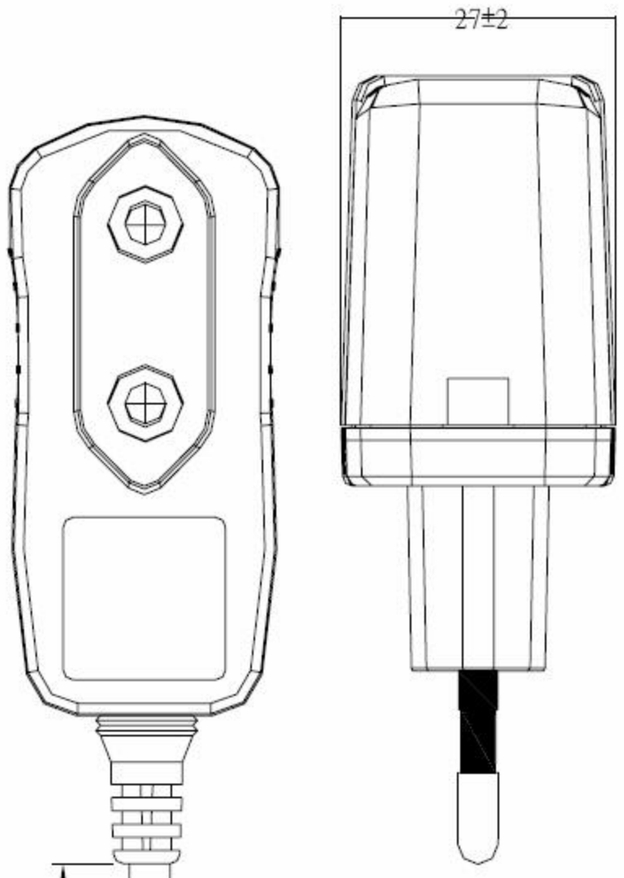


Label 1





Label 1



B XXXX XX XXXXXXXX

- Serial numerical
- Month
- Year
- B : Production line (A~Z)

NOTE:

1. Serial numerical digits: 15
2. Dimension: L=28mm * W=8mm
3. Black word on white base

NOTE:

1.CASE: L59 X W27X H40mm

2.AC INLET with 2 pins plug-in type

3.DC CABLE:UL1185 22AWG L=1200mm

4.DC PLUG:5.5x2.1x12mm內含103電容 Barrel straight
DC CORE:10.5x20x6mm
Spring loaded Center locking female barrol.
Center is positive.

5. Add Label 1 on the DC wire

公	差	
0	3	± 0.08
3	10	± 0.1
10	18	± 0.12
18	50	± 0.15
50	80	± 0.2
80	120	± 0.25
120	180	± 0.35

Rev No	Date	Revision Description	Approval
01	2011.10.19	First Issue	chenzhanhong

Customer		Name	Aspect Drawing	Part No	
Unit	mm	Rev No	01	Date	2011.10.19
Approval	chenzhanhong	Checked	chenzhanhong	Drawing	LiJingQin

Powertron Electronics Corp.
AC ADAPTER
MODEL:PA1008-050HE050
INPUT:100-240V~ 50-60Hz 0.3A
OUTPUT:5V ⎓ 0.5A 2.5W Max

PART NO.:PA1008-050HEB050
EFFICIENCY LEVEL: V

WARNING:
RISK OF ELECTRIC SHOCK,
DO NOT OPEN, INDOOR USE ONLY

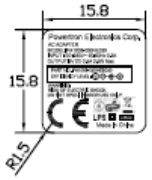
LPS RoHS
Made in China

NOTE:

1.Silver background with black solid characters.

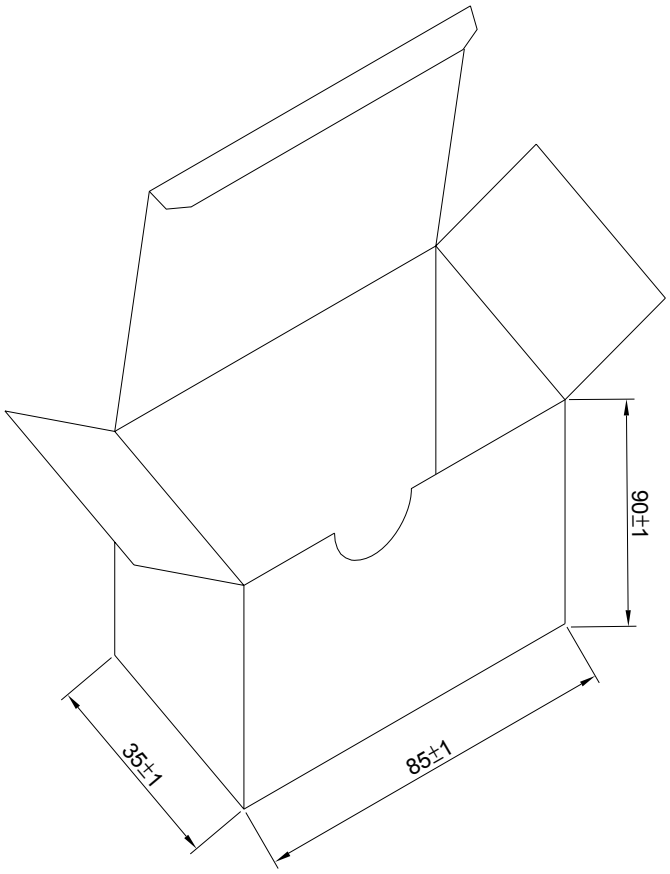
2.UL Recognized

3.MATERIAL PET ,T=0.1mm.



Rev No	Date	Revision Description	Approval
01	2011.10.19	First issue	chenzhanhong

Customer		Name	Label	Part No	
Unit	mm	Rev No	01	Date	2011.10.19
Approval	chenzhanhong	Checked	chenzhanhong	Drawing	Li Jinqing



NOTE:

1.Material:Hard card paper(color: outside is white,inner is gray),T=350G.

2.These measurements are exterior measured.

Rev No	Date	Revision Description	Approval
01	2011.10.19	First Issue	ChenZhanhong

Customer		Name	Whitebox Drawing	Part No	
Unit	mm	Rev No	01	Date	2011.10.19
Approval	ChenZhanhong	Checked	ChenZhanhong	Drawing	LiJingQin

Front Mark

PEC

C/NO.:

MADE IN CHINA

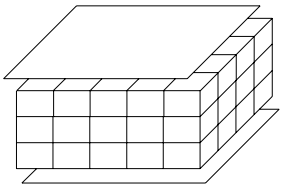
Side Mark

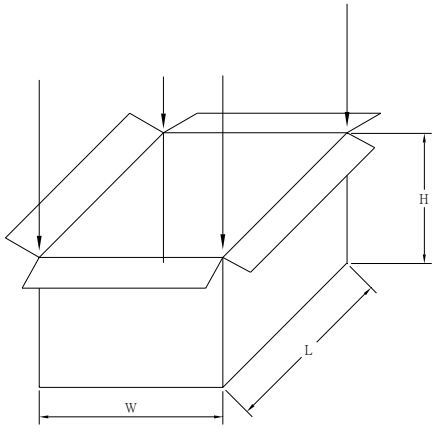
Q'TY: PCS
N.W.: KGS
G.W.: KGS

L=360mm

W=300mm

H=325mm





NOTE:

1.Material: Five-Layer corrugated A=A paper material and is conformed to the CNG standard. The strength of laceration is +15Kgs.

2.These measurements are the parameter of cartons.

3.The partitions are the corrugated paper,original colors.

4.Three layers in each outer carton,Each layer cotents 32pcs and five partition. 96pcs per carton.

Rev	Date	Revision Description	Approval
01	2011.10.19	First Issue	ChenZhanhong

Customer		Name	Carton drawing	Part No.	
Unit	mm	Rev No	01	Date	2011.10.19
Approval	ChenZhanhong	Checked	ChenZhanhong	Drawing	LiJingQin