



**深圳市火牛科技有限公司**  
**SHENZHEN HUONIU TECHNOLOGY CO., LTD.**



**REACH**

## SPECIFICATION FOR APPROVAL

CUSTOMER: \_\_\_\_\_ MODEL NO.:           HNO050400X            
 CUSTOMER P/N: \_\_\_\_\_ HUONIU P/N:           S005208-XF            
 REV.                   A                   DATE:           2012-8-22          

DESCRIPTION           Input: 100-240Vac; Output: 5.0Vdc 4.0A, SMPS Adapter          

### CUSTOMER APPROVED SIGNATURE

<b>APPROVED BY:</b>	<b>CHECKED BY:</b>	<b>TESTED BY:</b>
<b>DATE:</b>	<b>DATE:</b>	<b>DATE:</b>
Please send a copy of this specification back after you sign and approve for production		

ISSUED BY	周田玉	CHECKED BY		APPROVED BY	
-----------	-----	------------	--	-------------	--

### SHENZHEN HUONIU TECHNOLOGY CO., LTD.

Block No.5, The 4th Industrial Zone, Xitian Community, Gongming Town, Guangming New District,  
 ADD: Shenzhen, Guangdong, P.R. China

TEL : (+86) 755-29827666 (+86) 755-29828699

FAX : (+86) 755-28079166

E-mail: [sales@szhuoniu.com](mailto:sales@szhuoniu.com)

Website: <http://www.szhuoniu.com>

## Table of Content

No.	Content	Page
1	SCOPE	
	1.1 Description	3
2	INPUT REQUIREMENTS	
	2.1 Input Voltage & Frequency	3
	2.2 Current	3
	2.3 Inrush Current	3
	2.4 Stand-By Power	3
3	OUTPUT FEATURES	
	3.1 Output Parameters	3
	3.2 Turn On Delay	4
	3.3 Hold Up Time	4
	3.4 Typical Efficiency	4
	3.5 Output Transient Response	4
4	PROTECTION REQUIREMENT	
	4.1 Over-Voltage Protection	4
	4.2 Over-Current Protection	4
	4.3 Short-Circuit Protection	4
5	ENVIRONMENTAL CONDITIONS	
	5.1 Operating	4
	5.2 Non - Operating	4
6	RELIABILITY AND QUALITY CONTROL	
	6.1 MTBF	5
	6.2 Burn-In	5
	6.3 Component Derating	5
7	MECHANICAL CHARACTERISTICS	
	7.1 Physical Dimensions	5
	7.2 Name Plate	5
	7.3 Drop test	5
8	SAFETY	
	8.1 Safety Standard	5
	8.2 Insulation Resistance	6
	8.3 Dielectric Strength (Hi-Pot)	6
	8.4 Leakage Current	6
9	EMC STANDARDS	
	9.1 EMI Standards	6
	9.2 EMS Standards	7
10	OTHER REQUIREMENTS	
	10.1 Hazardous Substances	7
	10.2 Energy Efficiency	7
11	APPENDIX	
	Appendix A External View	8
	Appendix B Name Plate Drawing	9
	Appendix C Packing Drawing	10

# Design Revision History

Mark	Description of Change		Changed	Reason of	Revised	Approved
	Before	After	Date	Change	By	By
	New	—				

--	--	--	--	--	--	--

## 1. SCOPE

This document details the electrical, mechanical and environmental specifications of a switching power supply.

### 1.1 Description

- Wall Mount  Desk-Top  
 Open Frame  Others

## 2. INPUT REQUIREMENTS

2.1 The input voltage shall be single phase whin the following limits.

	Min	Max
Rated Input Voaltage	100V <sub>ac</sub>	240V <sub>ac</sub>
Input Voltage Range	90V <sub>ac</sub>	264V <sub>ac</sub>
Input Voltage Frequency	47Hz~63Hz	

### 2.2 Current

The maximum input current is 0.6A max. at 100 Vac .

### 2.3 Inrush Current

The inrush current will not exceed 50A at 230 Vac input and Max load for a cold start at 25°C.

### 2.4 Stand-By Power

The input power should be less than 0.3W with No-Load.

## 3. OUTPUT FEATURES

### 3.1 Output Parameters

NO.	Output Data	Spec. Limit			Test Condition
		Min Value	Typical	Max Value	
3.1.1					
3.1.2	Output Voltage	4.75	5.00	5.30	0 ~ 4A Loading
3.1.3	Current		4A		
3.1.4	Ripple and Noise	—	—	120mVp-p	20MHz Bandwidth 10uF Ele. Cap.0.1uF Cer. Cap,At115/230VA C input voltage and full load
3.1.5	Output power	—	—	20W MAX	MAX. load(4A) & 100-240Vac

HUO NIU P/N	REV.	DATE	SHEET
S005208-XF	0	2012-8-22	Page 3 of 10

### 3.2 Turn On Delay

During turn on and turn off, no output voltage shall exceed its nominal voltage by more than 10% and no output shall change its polarity with respect to its return line. All outputs shall reach their steady state values within 3 seconds of turn on.

### 3.3 Hold Up Time

10 ms minimum at 115Vac/60Hz input at maximum load, and 10 ms minimum at 230Vac/50Hz input at maximum load.

### 3.4 Typical Efficiency

The efficiency (watts out / watts in) shall be higher than 78.57 % typical while measuring at nominal line and maximum load condition, test in 1 minute after power on.

### 3.5 Output Transient Response

The power supply shall maintain output transient response time within 10ms with a loading current change from 20% to 80% of maximum current and 0.5A/ $\mu$ s rise up / draw down test at end of output terminal.

## 4. PROTECTION REQUIREMENT

### 4.1 Over-Voltage Protection

Over-voltage protection shall be included in the adaptor circuit. A single component failure must not cause an over voltage.

### 4.2 Over-Current Protection

The adaptor must have a current limiting function on the output voltage. in overload mode, the output must drop to a low voltage.

### 4.3 Short-Circuit Protection

The adaptor must withstand a continuous short circuit on the output without damage.

## 5. ENVIRONMENTAL CONDITIONS

### 5.1 Operating

The power supply shall be capable of operating normally in any mode without malfunctioning in the following environmental conditions.

#### 5.1.1 Operating Temperature: 0°C ~40°C

Relative Humidity: 10% ~ 90%

Altitude: Sea level to 2,000 m.

#### 5.1.2 Vibration: 1.0mm, 10 –55Hz, 15 minutes per cycle for each axis (X, Y, Z).

#### 5.1.3 Cooling: Natural convection cooling

### 5.2 Non - Operating

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

HUO NIU P/N	REV.	DATE	SHEET
S005208-XF	0	2012-8-22	Page 4 of 10

5.2.1 Storage Temperature: -30°C ~ 70°C

5.2.2 Relative Humidity: 10% ~ 90%

5.2.3 Altitude: Sea level to 2,000 m.

5.2.4 Vibration and Shock:

The power supply shall be designed to withstand normal transportation vibration per MIL-STD-810D, method 514 and procedures X, as it is mounted in the chassis assembly and packed for shipping.

## 6. RELIABILITY AND QUALITY CONTROL

6.1 MTBF

When the power supply is operating within the limits of this specification the MTBF shall be at least 25000 hours at 25°C (MIL-HDBK-217F).

6.2 Burn-In

The power supply shall withstand a minimum of 4 hours Burn-In test under full load at 35°C ~40°C room temperatures, after test, product shall operate normally.

6.3 Component Derating

Semiconductor junction temperatures shall not exceed the manufacturer's maximum thermal rating.

## 7. MECHANICAL CHARACTERISTICS

7.1 Physical Dimensions

The detail dimension of the power supply is drawn on APPENDIX A.

7.2 Nameplate

Please see APPENDIX B for a label of the power supply

7.3 Drop test

Dropped freely from 1 m (for wall mount product) height onto the surface is consisted of hardwood 13 mm thick, mounted on two layers of plywood each 19-20 mm thick, all supported on concrete floor once from 3 different surfaces. After testing, the product should not be damaged.

## 8. SAFETY

8.1 Safety Standard

The power supply shall be certified under the following international regulatory standards

HUO NIU P/N	REV.	DATE	SHEET
S005208-XF	0	2012-8-22	Page 5 of 10

Item	Country	Certified	Standard

8.2 Insulation Resistance

Input to output: **10 MΩ** min. at **500 VDC**.

8.3 Dielectric Strength (Hi-Pot)

Primary to Secondary **DC4242V,5mA** 1 minute for safety test, 3 seconds for product.

8.4 Leakage Current

The leakage current shall be less than **0.25mA** for **Class II** when the power supply is operated maximum input voltage

**9. EMC STANDARDS**

9.1 EMI Standards

The power supply shall meet the radiated and conducted emission requirements for

9.2 EMS Standards

The power supply shall meet the following EMS standards

9.2.1 IEC61000-4-2 Electrostatic Discharge (ESD)

Static – discharge test by contact or air should be conducted with Static – discharge tester, energy storage capacitance of 150pF, and discharge resistance of 330Ω.

**8KV** air discharge, **4KV** contact discharge, Performance Criterion B.

9.2.2 IEC61000-4-3 Radiated Electromagnetic Fields(RS)

Radio- frequency Electromagnetic Field Susceptibility Test, RS, 80-1000MHz,3V/m, 80%AM(1KHz), Performance Criterion A.

9.2.3 IEC61000-4-4 Electrical Fast Transient / Burst (EFT)

Power Line to Line: **1KV**

Performance Criterion B.

HUO NIU P/N	REV.	DATE	SHEET
S005208-XF	0	2012-8-22	Page 6 OF 10

9.2.4 IEC61000-4-5 Lightning Surge Attachment

Lightning Surge voltage of differential and common modes shall be applied across AC input lines and across input and frame ground.

Power Line to Line: **1KV**

Line to Earth : **2KV**

Performance Criterion B.

9.2.5 IEC61000-4-6 Conducted Radio Frequency Disturbances (CS)

Conducted Radio Frequency Disturbances Test, CS, 0.15-80 MHz, 3V/m, 80%AM, 1KHz, Performance Criterion A.

9.2.6 IEC61000-4-11 Voltage Dips/Short Interruption/Variations

Voltage Dips, 30% reduction- 10ms, Performance Criterion B, 60%

Reduction – 100ms, Performance Criterion C, Voltage Interruptions>95%

Reduction- 5000ms, Performance Criterion C.

## 10. OTHER REQUIREMENTS

### 10.1 Hazardous Substances

The components and used materials shall be in compliance with

EU Directive 2002/95/EC "RoHS"

EU Directive 2002/96/EC "WEEE"

### 10.2 Energy Efficiency

10.2.1 The No-Load power consumption shall be less than **0.3W** at input **115/230Vac,60/50Hz**

10.2.2 The average active mode efficiency shall be higher than **78.57 %** at input **115/230Vac,60/50Hz**

10.2.3  International Efficiency Level      V

Korea Energy Efficiency Label

10.2.4 This power supply is therefore in compliance with the requirements of

California Energy Commission for external power supplies (CEC)

Energy Star requirements for external power supplies(EPS Version 2.0)

EU Code of Conduct on Energy Efficiency of External Power Supplies (Version 4)

Australian and New Zealand Energy Performance Requirements for external power supplies (MEPS)

China Energy Efficiency requirements for external power supplies ([GB20943-2007](#))

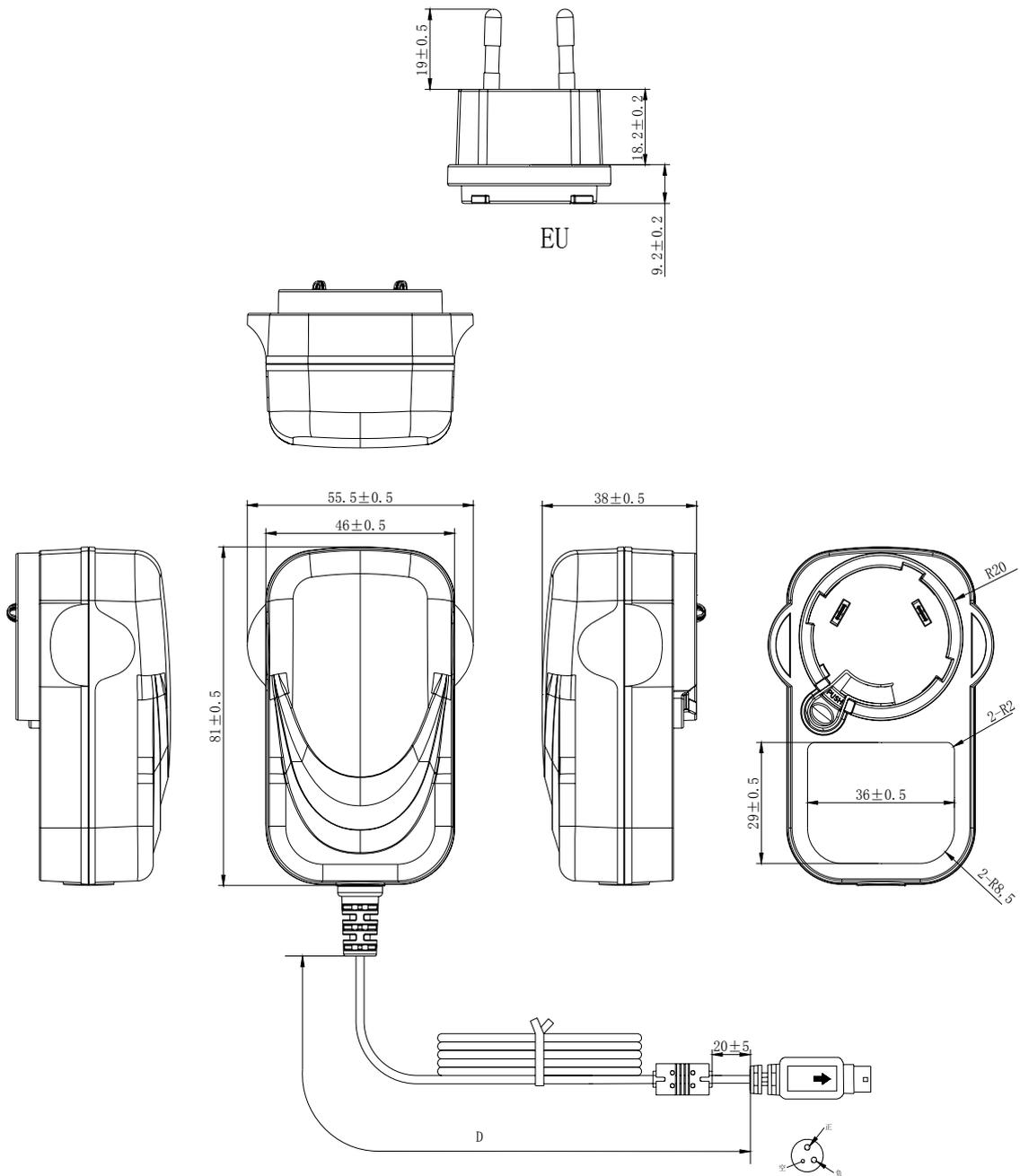
Korea regulation on Energy Efficiency Labeling and Standards for external power supplies (MKE's Notification 2008-99)

Implementing Directive [2009/125/EC](#) of the European Parliament and of the Council with regard to ecodesign requirements for no-load condition electric power consumption and average active efficiency of external power supplies ([No 278/2009 ,Stage 2](#))

HUO NIU P/N	REV.	DATE	SHEET
S005208-XF	0	2012-8-22	Page 7 of 10

# APPENDIX A

Mechanical Dimensions(Unit: mm) Tolerance Of unspecified Parts:  $\pm 1.5\text{mm}$

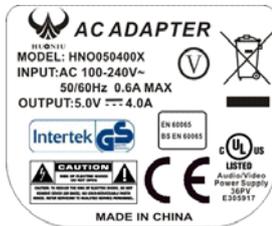


	$\Phi A$	$\Phi B$	C	D
DIMENSION				1200
TOLERANCE	+0.1/0	$\pm 0.1$	$\pm 0.5$	$\pm 50$
REMARK	AWG18# / 2C UL1185 Two core head+CORE			black

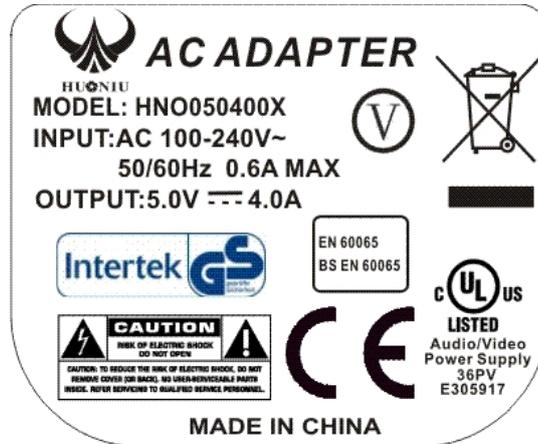
HUO NIU P/N	REV.	DATE	SHEET
S005208-XF	0	2012-8-22	Page 8 of 10

# APPENDIX B

Name Plate:



1:1



1:2

Size: **35.5\*28.5**

Unit: mm

Tolerance:  $\pm 0.5$

Back Color : **Black**

Word Color: **Silvery**

\* Please Advise If There Is Any Comment About The Name Plate Information.

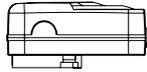
Otherwise, This Information Is Defaulted As Customer Approval,

And Will Be Applied To Production .

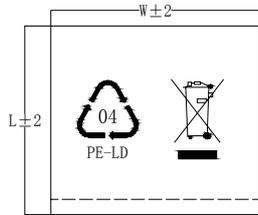
HUO NIU P/N	REV.	DATE	SHEET
S005208-XF	0	2012-8-22	Page 9 of 10

# APPENDIX C

PRODUCT:



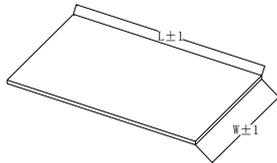
PLASTIC BAG:



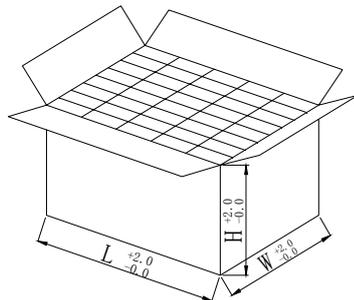
DIMENSION(UNIT IN cm):

	L	W	H
PLASTIC BAG	15.0	16.0	
PAPERBOARD	43.0	30.0	
CARTON	45.0	32.0	26.0

PAPERBOARD:



CARTON:



PACKING METHOD:

PAPERBOARD PLACEMENT METHOD	PUT A PAPERBOARD AT THE TOP AND BOTTOM, TOTAL OF 5PCS
PACKING METHOD	16PCS/LAYER X 4 LAYERS
QTY	64PCS

REMARK:

1. STORAGE CONDITION

TEMPERATURE: -10°C ~ +60°C

RELATIVE HUMIDITY: 30% ~ 80%

2. STORAGE PERIOD: 6 MONTHES

3. ANLISTATIC: NO REQUIREMENT

4. PLEASE ADVISE IF THERE IS ANY COMMENT ABOUT THE PACKING INFORMATION.

OTHERWISE, THIS INFORMATION IS DEFAULTED AS CUSTOMER APPROVAL,

AND WILL BE APPLIED TO PRODUCTION.

HUO NIU P/N

REV.

DATE

SHEET

S005208-XF

0

2012-8-22

Page 10 of 10