

SPECIFICATION

HONG GUANG

HGP-AD40A48

SWITCHING POWER SUPPLY

CHANGZHOU WUJIN HONGGUANG RADIO CO., LTD

A TOTAL OF 12 PAGES

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1. SCOPE

This is the engineering specification of HGP-AD40A48,25-40Watt power switching power supply, with wide voltage 100V--240V AC input, single DC output, packaged into a fully enclosed plastic case with integrated output cable and connector.

Models covered: HGP-AD40A48

2. CONNECTIONS

The following specifies the input and output connection requirement of the power supply.

2.1	INPUT CONNECTOR two wire, 2P,IEC-C8 connector		
2.2	OUTPUT CABLE/CONNECTOR A two wire cable with standard right angle barrel connector, Connector for model name ending with "E" shown, The length of the output cable is about 1.8M for all models . A two wire cable with standard right angle barrel connector.		
2.3	PIN ASSIGNMENTS		
	INPUT(J1)	OUTPUT(CSI)	
	Pin 1:Line	Outside: GND	
	Pin 2:Neutral	Inside : Vout(I)	

3. ELECTRICAL REQUIREMENTS

(Unless specified otherwise, all specifications are at nominal input voltage, full load, 25deg C, PSU at warmed up condition.)

3.1	INPUT The operating conditions with respect to the AC input voltage are described in this section.
3.1.1	INPUT VOLTAGE The operating voltage range is: 100V to 240 VAC.
3.1.2	INPUT CURRENT When the input voltage is 100 VAC at 40W, then the max input current shall be less than 0.8A.
3.1.3	INPUT FREQUENCY Input frequency range shall be 47-63Hz.
3.1.4	INRUSH CURRENT Maximum inrush shall be less than 20A at 240VAC.
3.1.5	EFFICIENCY The efficiency of the power supply is 85% nominal, Measured at Full Load and nominal AC Input voltage of 100VAC. 25°C with the PSU warmed up, at 48V output. O/P Cable drop of 0.15V typical is removed for this calculation. at 124V output. O/P Cable drop of 0.3V typical is removed for this calculation.
3.1.6	POWER FACTOR Input AC voltage connects to internal diode bridge rectifier and Filter, 40W output load is >0.60

3.2	OUTPUT POWER The operating conditions for the regulated DC output are described in this section.
3.2.1	OUTPUT POWER Depends on models, possible Max. Output power is 45W with O/P voltage of 48V/30V and above, 40W for O/P volt below 24V and down to 18V, It is 36 Watts below 16V/12V,. Max rated power for a specific model HGPxxFSyyE is "XX" Watt

3.2.2	OUTPUT VOLTAGE Initial point voltage is measured at Min. Load/ Half Load/Max. load, at nominal input AC voltage, The nominal output voltage of a specific model HGP-ADxxAyy is "YY" volt.This voltage change is indicative of change due to process variation and change due to load variation. The set point tolerance is measured with reference to the respective nominal Voltage and expressed as percentage of the nominal output voltage.				
	Model	OUTPUT	NOMINAL VOLTAGE	SETPOINT TOLERANCE	User Adjust
	HGP-AD40A48	+V out(I)	+48VDC	<3%	NA

3.2.3	OUTPUT CURRENT The maximum load capacitance shall be less than 1500uF for any nominal output voltage below 24V and 2200uF for any nominal o/p volt above 19V. Any load capacitance shall be discharged below 1V before the PSU is turned on. The max. continuous rated output current for the specific models is listed below. HGP-AD40A48,Under overload, max permissible P-P power is 40W, protection (Over Current Protection) shall not be activated greater than the Min. P-P current.				
	Model	Output	MIN. Load Current	MAX. Load Current	Peak Current limit min(P-P)
	HGP-AD40A48	+Vout(I)=48V	0A	0.83A	2.0A

3.2.4	LINE REGULATION Regulation is measured by varying the line voltage from 100-240VAC, at full load.
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Model	OUTPUT	TOLERANCE
ALL	+Vout(I)	<4%

3.2.5	LOAD REGULATION Measured by varying the load current from MIN Load to FULL load at nominal AC input voltage. Measured at o/p power cord end. This measures output voltage variation of a unit due to load change and is indicative of design capability. The tolerance is measured with reference to the respective nominal Voltage and expressed as percentage of nominal output voltage.
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Model	OUTPUT	TOLERANCE
ALL	+Vout(I)	<3%

3.2.6	CROSS REGULATION Measured at 50% load on output while any other output load changed by 50%.
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3.2.7	OUTPUT RIPPLE AND NOISE VOLTAGE (PAPD) Measured at full load, 100MHz bandwidth, with a 0.1uF Ceramic Cap and a 47uF Tant.
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	Cap/E-Cap. connected at the measurement point. The maximum PARD PK-PK ripple and noise is indicated below.
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Model	Output	Max pk-pk
HGP-AD40A48	+Vout(I)=48V	<500mV

3.2.8	OUTPUT TRANSIENT RESPONSE The load current of measured output is changed between 10% to 100% max load for all models, at 0.1A/sec slew rate, at 100/120Hz, 50% duty cycle. The recovery time and excursion is measured when the output voltage has recovered to within 1% of the load regulation band. Expressed as percentage of the nominal voltage.
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Model	Output	RECOVERY TIME To regulation	MAX. EXCURSION From Regulation
ALL	+Vout(I)	<1ms	<3%

3.2.9	OUTPUT TRANSIENT RESPONSE Long-term output voltage drift over 1000 hours of operation, at Vout (I) is typically less than 0.5%.
3.2.10	OUTPUT OVERSHOOT The overshoot voltage as a percentage of nominal output voltage at initial power up of the PSU, at 90w full load condition is indicated below. Measured with ref. to the o/p regulation band.

Model	OUTPUT	OVERSHOOT
ALL	+Vout(I)	<5%

3.2.11	OUTPUT PROTECTION The power supply load shall be protected against a fault condition described below.
3.2.11.1	OVERVOLTAGE Redundant Feedback type. The load is protected against any output over voltage under any fault condition; the trip voltage depends on the nominal output voltage of the models. Over voltage shall be less than, HGP-AD36A12 is 15.V voltage. HGP-AD40A24 is 48.V voltage.
3.2.11.2	OUTPUT SHORT CIRCUIT /OVERLOAD PROTECTION The PSU shall be protected against overload as per section 3.2.3. The power supply will be protected against output short circuit. Short circuit current shall be less than 0A rms. Under all conditions. Output voltage of less than 50%Vout (I) constitutes a short. The PSU will self recover within a max. of 3 sec. after removal of the fault.
3.2.12	OUTPUT RISE TIME The time taken by the output to rise from 10% to 90% of the final steady state value, should be as below.

Model	OUTPUT	MAX RISE TIME
ALL	+Vout(I)	<10ms

3.2.13	TURN-ON DELAY The rum-on delay time, from the time AC power is applied to the PSU till the o/p voltage is within the regulation band. Shall be less than 2seconds at 100 VAC. cold start.
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3.2.14	OUTPUT HOLD-UP-TIME The power supply shall maintain the output within it's voltage/current specifications for more than 20ms. after any loss of AC input voltage. Measured at nominal input voltage of 100-240VAC and at point when output is crossing regulation band.
3.2.15	REMOTE SENSE N/A

3.2.16	POWER FALL/POWER GOOD SIGNAL N/A
3.2.17	TEMPERATURE COEFFICIENT Temperature coefficient over the entire operating temperature range of 0°C to 40°C after one hour warm-up will be as follows:

Model	OUTPUT	TEMP. COEFF.
ALL	+Vout(I)	<2.4mV/°C

4. ENVIRONMENTAL REQUIREMENTS

4.1	TEMPERATURE Operating temperature range is -10°C to 40°C at the respective rated output power, with free air convection. Surface temperature shall be less than 60°C at 20°C operating temperature. Non-operating temperature range: -40°C to 85°C.				
4.2	ALTITUDE Maximum operating altitude: 10,000 feet, Maximum Non-operating altitude: 40,000 feet.				
4.3	HUMIDITY Non-condensing relative humidity range: 5% to 95%.				
4.4.1	VIBRATION The power supply shall meet operating, non operating and package vibration,				
	vibration	frequency	acceleration	tow time	cycles
	Operating	5-500Hz	0.5G	15min,XYZ all 15 min	2
	Non operating	5-500Hz	1G	15min,XYZ all 15 min	2
	package	5-500Hz	1.5G	15min,XYZ all 30 min	2
4.4.2	SHOCK The power supply shall meet operating and non operating shock, On floorboards thick for 10mm wood block.				
	Shock	height	direction	cycles	
	Operating	0.3m	XYZ all 3 times	6	
	Non operating	1.0m	XYZ all 3 times	6	
4.5	INPUT TRANSIENT SUSCEPTIBILITY The unit shall comply with requirements of IEC, 1000-4-2, IEC 1000-4-4 and IEC 1000-4-5, will withstand ESD of 8K Contact Discharge, will withstand ESD of 20K Air Discharge, 10 strides, both +ve and -ve, as per IEC 1000-4-2.				
4.6	AC-LINE INPUT INRUSH NOISE Minimum dielectric AC-line inrush voltage noise: Between AC input L to N: .				
	Inrush noise	Tr / Td	Voltage	Phase	time
	Operating	1.2 μ s /50 μ s	2.0kV	0°	1 min
				90°	
				270°	
360°					

4.7	THERMAL SHUTDOWN NC
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5. SAFETY REQUIREMENTS

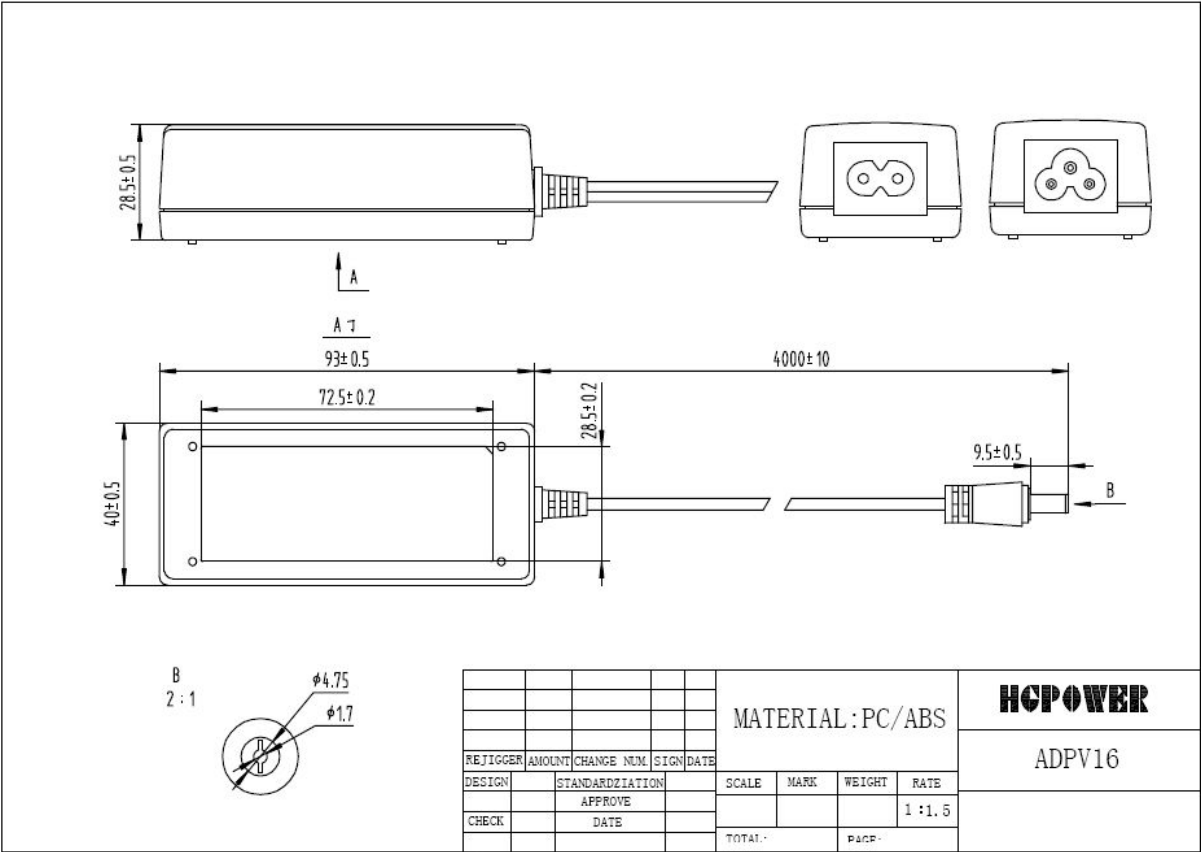
5.1	DIELECTRIC WITHSTAND VOLTAGE Minimum dielectric withstands voltage: Between input to output: 3000VAC rms/1 minute. Leakage current shall be 3mA maximum.	
5.2	NC	
5.3	INSULATION RESISTANCE Minimum insulation resistor from primary to secondary shall be 100M Ω , The voltage DC 500V.	
5.4	SAFETY SPACINGS 6.4mm minimum between primary and secondary.	
5.5	SAFETY STANDARDS APPROVAL The power supply will meet Class II, SELV of the following safety agency requirements:	
5.5.1	UL STANDARDS	
	1.	UL1492-2 edition The standard for audio-video products and accessories.
	2.	UL6500 edition The standard for products and accessories.
	C-UL	
	1	CSA C22.2 No.1 Safety of radio, television and electrical equipment.
	2	CSA C13.2 No.1 Safety of radio, television and electrical equipment.
	3	CSA C22.2 No.950 Safety of information technology equipment, including electrical business equipment.
	4	CSA-E65 The standard for information technology equipment, including electrical business equipment and associated equipment.
5.6	REL. IABILITY	
	5.6.1	MTBF@ 25°C shall be 20,000 hours min.

6. EMI REQUIREMENTS

EMI STANDARD: EN55022 CLASS B, EN6100-3-2, 3. FCC Class B.

6.1	CONDUCTION The adapter will conform to FCC PART15 Class B, VCCI Class B, and CISPR Pub.13 Class B.
6.2	RADIATION The adapter will conform to FCC PART15 Class B, VCCI Class B, and CISPR Pub.13 Class B.

7. Outside frame drawing



8. IMPORTANT SAFETY INSTRUCTIONS**IMPORTANT SAFETY INSTRUCTIONS**

- 1) Read these instructions
- 2) Keep these instructions
- 3) Heed all warnings
- 4) Follow all instructions
- 5) Do not use this apparatus near water
- 6) Clean only with dry cloth
- 7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8) Do not install near any heat sources such as radiators, heat registers stoves or other apparatus (including amplifiers) that produce heat.
- 9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety, if the provided plug does not into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10) Protect the power cord from being walked on or pinched particularly at plugs. Convenience receptacles and fire point where they exit from the apparatus.
- 11) Only use attachments accessories specified by the manufactures
- 12) Unplug this apparatus during Lightning storms or when unused for long periods of time
- 13) Refer all servicing to qualified service personnel Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged liquid has been spilled or objected have been fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- 14) Don't open the enclosure avoid electric shock!



9. Instruction for safety usage

Instruction for safety usage

1. **Caution! :** This sign warning there are risk of Electric Shock.
2. **Warning:** This sign warning there are important safety parts and Hi-Voltage together with the product.
3. **Indoor:** This sign warning that the products can only be used indoor.

Usage

Note:

- For avoiding static shock or high-voltage arc, please use wide-notch socket & insert the plug into the socket completely.
- For Power Supply working reliable please be sure the socket must be suitable for the output plug and insert them tightly.
- Please always keep the Power Supply at ventilating place; otherwise it will enter into protecting situation.

Warning:

- Do not install this power supply in a confined space such as a book case or similar unit.
- There is no switch in the product. The mains plug or appliance coupler is used as disconnect device, it shall be easily accessible.
- No naked flame sources, such as lighted candles. Should be placed on the apparatus.
- Do not exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.
- The product is suitable to be used in moderate climate, do not use it in tropics.
- To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
- Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

Caution! :

- Please don't use AC voltage which not in the range of 100-240V, otherwise the Power Supply may be damaged.
- When pull the plug out from the socket, please hold its base but never pull it by draw its wire, as the wire may be broken or damaged to cause short circuit & fire.

10. Certificate

Zertifikat

Certificate



Zertifikat Nr. *Certificate No.*
S 50083273

Blatt *Page*
0001

Ihr Zeichen *Client Reference*
Z.R.Z.

Unser Zeichen *Our Reference*
01-LWC- 15016307 001

Längstens gültig bis *Latest expiration date*
29.06.2011 (day/mo/yr)

Genehmigungsinhaber *License Holder*
Changzhou Wujin Hong Guang
Radio Co., Ltd.
Puan Banshang, Lijia Town
Wujin, Jiangsu 213100
P.R. China

Fertigungsstätte *Manufacturing Plant*
Changzhou Wujin Hong Guang
Radio Co., Ltd.
Puan Banshang, Lijia Town
Wujin, Jiangsu 213100
P.R. China

Prüfzeichen *Test Mark*

Geprüft nach *Tested acc. to*
EN 60950-1:2001+A11



Zertifiziertes Produkt *(Geräteidentifikation)*
Certified Product (Product Identification)

Lizenzentgelte - Einheit
License Fee - Unit

Netzgerät (Switching Power Supply Adaptor)

Bezeichnung : HGP-AD40A48 8
(Type Designation)
Nennspannung : AC 100-240V; 50/60Hz
(Rated Voltage)
Nennstrom : 0,85A
(Rated Current)
Ausgangsspannung : DC 48V
(Output Voltage)
Ausgangsstrom : 0,83A
(Output Current)
Schutzklasse : II
(Protection Class)
Max. Betriebstemperatur : +40°C
(Max. Operating Temperature)
Vermerke: Primär- und Sekundärkreise sind durch verstärkte
Isolation getrennt.
(Remarks: Primary and secondary circuits are separated by
reinforced isolation.)



ANLAGE (Appendix): 1.0

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde.
Produkt und Fertigungsstätte erfüllen § 4 (1) bzw. (2) und § 7(1) des Geräte- und
Produktsicherheitsgesetzes.

*This certificate is based on our Testing and Certification Regulation.
Product and production fulfill par 4 Art. 1 or Art. 2 and Par 7 Art. 1 of the
German Equipment and Product Safety Law.*

TÜV Rheinland Product Safety GmbH, Am Grauen Stein, D-51105 Köln
Tel.: (+49/221)8 06 - 13 71 e-mail: cert-validity@de.tuv.com
Fax: (+49/221)8 06 - 39 35 http://www.tuv.com/safety

Zertifizierungsstelle

Dipl.-Ing. P. Hartstein

Ausstellungsdatum *Date of Issue* : 30.06.2006 (day/mo/yr)

**C E R T I F I C A T E**

of Conformity
Low Voltage Directive 73/23/EEC
as last amended by EEC Directive 93/68/EEC

Registration No.: AN 50082867 0001

Report No.: 15016307 001

Holder: Changzhou Wujin Hong Guang
Radio Co., Ltd.
Puan Banshang, Lijia Town
Wujin, Jiangsu 213100
P.R. China

Product: Netzgerät
(Switching Power Supply Adaptor)

Identification: Type Designation: HGP-AD40A48
Serial Number : Engineering Sample
Remark : Issued in conjunction with TÜV Rheinland
license S 50083273 0001.

This certificate of conformity is based on an evaluation of a sample of the above mentioned product. Technical Report and documentation are at the Licence Holder's disposal. This is to certify that the tested sample is in conformity with all revision of Annex I of Council Directive 73/23/EEC, in its latest amended version, referred to as the Low Voltage Directive. This certificate does not imply assessment of the series-production of the product and does not permit the use of a TÜV Rheinland mark of conformity. The holder of the certificate is authorized to use this certificate in connection with the EC declaration of conformity according to Annex III of the Directive.

Cologne, 30.06.2006



Certification Body

Dipl.-Ing. P. Hartstein

TÜV Rheinland Product Safety GmbH - Am Grauen Stein - D-51105 Köln

CE The CE marking may be used if all relevant and effective EC Directives are complied with. CE

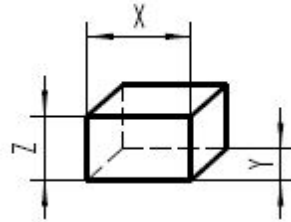
11. Packing

11.1 Inner box

X: 160 mm

Y: 90mm

Z: 45mm



11.2 Carton

X: 480 mm

Y: 340 mm

Z: 230mm

