

# SPECIFICATION

## ADPV58 SERIES AC/DC ADAPTER

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HGPOWER

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**RECORD OF ALTERATION**

<b>PRODUCT NAME</b>	Switching Power for adapter													
<b>MODEL NAME</b>	ADPV58A、 B、 C、 D、 E、 F、 G、 K													
REVISION:														
REV NO.	01.	02.	03.	04.	05.	06.	07.	08.	09.	A	B	C	D	E
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REV NO	Issue Date	Effective Date	Details of alteration content						Design	Check				

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##### **1. Scope**

This is the engineering specification of 25~ 48Watt power desk top AC/DC adapter, with wide voltage 100~240V AC input, single DC output, packed into a plastic case . Models covered :

ADPV58A-HGP-AD48A12

ADPV58B-HGP-AD48A20

ADPV58C-HGP-AD48A24

ADPV58D-HGP-AD48A30

ADPV58E-HGP-AD25A05

ADPV58F-HGP-AD48A48

ADPV58G-HGP-AD48A16

ADPV58K-HGP-AD48A14

## 2. Connector

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

### 2.1 Input connector

Three wire, 3P, IEC-C14connector or 2 wire C8 connector .

### 2.2 Output cable/connector

A two wire cable with standard DC connector .

## 3. Electrical requirements

Unless specified otherwise, all specifications are at nominal input voltage, full load, 25°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 240VAC.

#### 3.1.2 Input Current

When the input voltage is 100VA at 25W, then the max input current shall be less than 0.6A

When the input voltage is 240VA at 25W, then the max input current shall be less than 0.4A

When the input voltage is 100VA at 48W, then the max input current shall be less than 1.0A

When the input voltage is 240VA at 48W, then the max input current shall be less than 0.5A

#### 3.1.3 Input Frequency

Input frequency range shall be 50Hz/60Hz (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 79%~85% nominal, Measured at Full Load and nominal AC Input

voltage of 220VAC, 25°C with the PSU warmed up, at output. O/P Cable drop of 0.3V typical is removed for this calculation. but if the efficiency of the power supply is 79% when the output power 25w, output voltage is 5V.

#### 3.1.6 Power Factor

Input AC voltage connects to internal diode bridge rectifier and Filter 48W, 25W, output load is  $\geq$  0.60

### 3.2 Output

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 48W with O/P voltage of 30V and above, 48W for O/P volt below 16V,20V, 24V and down to 12V, It is 25Watt below 5V. Max rated power for a specific model ADPV58(A, B, C, D, E, F, G, K)HGP-xxAyy , “xx” is 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 ADPV58(A, B, C, D, E, F, G, K)HGP-xxAyy . “yy” is 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 nominal output voltage.

Model	Output	Nominal voltage	Set point tolerance
ADPV58A-HGP-AD48A12	OUTV+	+12V	<4%
ADPV58B-HGP-AD48A20	OUTV+	+20V	<4%
ADPV58C-HGP-AD48A24	OUTV+	+24V	<4%
ADPV58D-HGP-AD48A30	OUTV+	+30V	<4%
ADPV58E-HGP-AD25A05	OUTV+	+5V	<4%
ADPV58F-HGP-AD48A48	OUTV+	+48V	<4%
ADPV58G-HGP-AD48A16	OUTV+	+16V	<4%
ADPV58K-HGP-AD48A14	OUTV+	+14V	<4%

#### 3.2.3 Output Current

Model	Output	Min.Load current	Max.Load current	Limit Current
ADPV58A-HGP-AD48A12	OUTV+=12V	0A	4A	4.5A
ADPV58B-HGP-AD48A20	OUTV+=20V	0A	2.4A	3.5A
ADPV58C-HGP-AD48A24	OUTV+=24V	0A	2A	3A
ADPV58D-HGP-AD48A30	OUTV+=30V	0A	1.6A	2.5A
ADPV58E-HGP-AD25A05	OUTV+=5V	0A	5A	7A
ADPV58F-HGP-AD48A48	OUTV+= 48V	0A	1A	1.2A
ADPV58G-HGP-AD48A16	OUTV+=16V	0A	3A	4A
ADPV58K-HGP-AD48A14	OUTV+= 14V	0A	3.4A	4.5A

#### 3.2.4 Line Regulation

Regulation is measured by varying the line voltage from 100~240VAC,at full load.

Model	Output	Tolerance
All	OUTV+	<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.

Model	Output	Tolerance
All	OUTV+	<3%

### 3.2.6 Cross Regulation

Measured at 50% load on output while any other output load changed by 50%.

ALL Models

### 3.2.7 Output Ripple And Noise Voltage(Papd)

Measured at full load, 20MHz bandwidth, with a 0.1uF Ceramic Cap and a 47uF/50V Tant.Cap/E-Cap. Connected at the measurement point. The maximum PARD PK-PK ripple and noise is indicated below.

Model	Output	Max pk-pk
ADPV58A-HGP-AD48A12	OUTV+=12V	<150mV
ADPV58B-HGP-AD48A20	OUTV+=20V	<200mV
ADPV58C-HGP-AD48A24	OUTV+=24V	<200mV
ADPV58D-HGP-AD48A30	OUTV+=30V	<300mV
ADPV58E-HGP-AD25A05	OUTV+=05V	<80mV
ADPV58F-HGP-AD48A48	OUTV+= 48V	<200mV
ADPV58G-HGP-AD48A16	OUTV+=16V	<150mV
ADPV58K-HGP-AD48A14	OUTV+=14V	<150mV

### 3.2.8 Output Transients 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, The recovery time to regulation<1ms and Max. excursion from regulation<3% when the all models nominal output voltage.

### 3.2.9 Output Voltage Drift

Long-term output voltage drift over 1000 hours of operation, at OUTV+ is typically less then 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 48W and 25W full load condition is indicated below. Measured with ref, to the O/P regulation band. The output overshoot <5% when the all models nominal output voltage.

### 3.2.11 Output Protection

The power supply load shall be protected against a fault condition described below.



### 3.2.11-1 Over Voltage Protection

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.

ADPV58A over voltage shall be less than 15V voltage.	Closed contour
ADPV58B over voltage shall be less than 24V voltage.	Closed contour
ADPV58C over voltage shall be less than 28V voltage.	Closed contour
ADPV58D over voltage shall be less than 34V voltage.	Closed contour
ADPV58E over voltage shall be less than 8V voltage	closed contour
ADPV58F over voltage shall be less than 56V voltage	closed contour
ADPV58G over voltage shall be less than 20V voltage	closed contour
ADPV58K over voltage shall be less than 18V voltage	closed contour

### 3.2.11-2 Output short circuit/Overload protection/TEMP protection

The PSU shall be protected against over the section 3.2.3. The power supply will be protected against output short circuit. The current shall be close to 0A. When the output of the power supply is overload, it will maintain the unchanged power. The current will go up, and the voltage will drop down. Output voltage is less than 50% V-out constitutes a short. The PS will get into protection states. The time is not more than 3 seconds. When the temperature of the shell raise to 95 °C ~ 105 °C, the power supply will keep interval work, the temp will near 80 °C, the PC can regain automatically after the malfunction of short is worked off.

### 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. The Max rise time < 10ms, when the all models nominal output voltage.

### 3.2.13 Turn-On Delay

The run-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 2 seconds at 100VAC. Cold start.

### 3.2.14 Output Hold-Up- Time

The power supply shall maintain the output within it's voltage/current specification for more than 10ms 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 Power good/bad Signal

N/A

### 3.2.16 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. The temperature coefficient < 2.4mV/°C when the all models nominal output voltage.

## 4. Environmental requirements

### 4.1 Temperature

Operating temperature range is  $-10^{\circ}\text{C}$  to  $40^{\circ}\text{C}$  at the respective rated output power, with free air convection. Surface temperature shall be less than  $60^{\circ}\text{C}$  at  $25^{\circ}\text{C}$  operating temperature. Non-operating range:  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$ .

#### 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	cycle
Operating	5-500Hz	0.5G	15min,xyz all 15min	2
Non-operating	5-500Hz	1G	15min,xyz all 15min	2
Package	5-500Hz	1.5G	15min,xyz all 30min	2

##### 4.4.2 Shock/Fall

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 8KV. Contact Discharge, will withstand ESD of 12KV 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	cycles
Operating	1.2us/50us	2.0KV	0°	1min	10
			90°		10
			270°		10
			360°		10

## 5. Safety requirements

### 5.1 Dielectric Withstand Voltage

Minimum dielectric voltage: I 、 Between input to output: 1500VAC/1 minute. Leakage current shall be 10mA maximum.

II 、 Between Pin1 ~ Line(L) to Pin3 ~ Earth ( FG ) 1500VAC/1 minute. Leakage current shall be 10mA maximum.

III 、 Between Pin2 ~ Neutral(N) to Pin3 ~ Earth ( FG ) 1500VAC/1

minute. Leakage current shall be 10mA maximum.

#### 5.2 Leakage Current

Maximum leakage current from primary to secondary shall be 0.25mA. Minimum voltage 240VAC.

#### 5.3 Insulation Resistance

Minimum insulation resistor from primary to secondary shall be 100M $\Omega$ . Voltage DC 500V.

#### 5.4 Safety Spacing

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, C-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. |

##### 5.5.2 Marking

With the following marking: UL,C-UL, CE

#### 5.6 Reliability

MTBF@ 25 $^{\circ}$ C shall be 50,000 hours min.

### 6. EMI Requirements

EMI STANDARD: EN55022 CLASS B, EN6100-3-2.3, FCC CLASS B

#### 6.1 Conduction

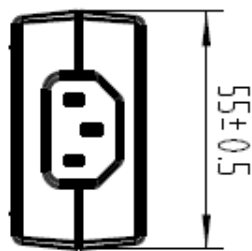
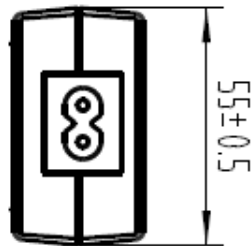
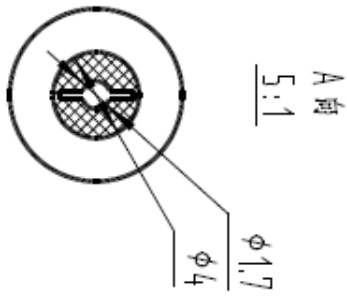
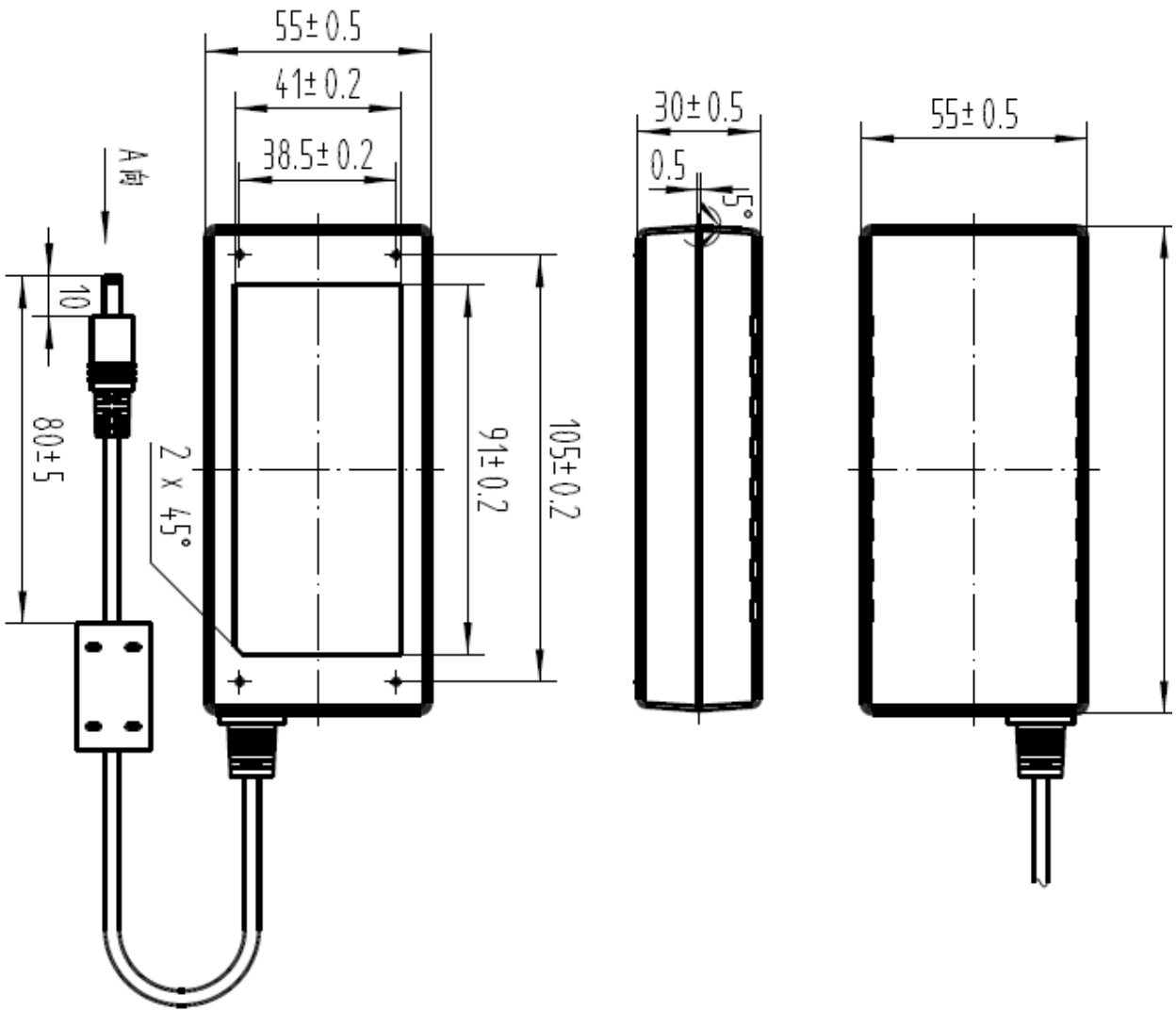
The adapter will conform to FCC PART15 Class B, VICC Class B, and CISPR Pub.13 Class B.

#### 6.2 Radiation

The adapter will conform to FCC PART15 Class B, VICC Class B, and CISPR Pub.13 Class B.

### 7. RoHS Compliant

### 8. Size : 120x55x30 , as following drawing .



**HGPOWER**<sup>®</sup>  
ADP V58