

65W
Medical Power Supply
SPECIFICATION

Description : 36Volts / 1.81Amps

Part No. : AD-AT065P360

Version : 02

Date : 13-July-2012

1. Feature :

- ◆ **Input** : Universal 100 ~ 240 Vac / 50~ 60 Hz Input, without any slide switch.
- ◆ **Output** : +36V / 0~1.81A
- ◆ **Case Dimension** : 119 (L) *60 (W) * 36 (H) mm
- ◆ **Efficiency** : Eff (av) \geq 87%
- ◆ **Safety** : UL / cUL / TA License
ANSI/AAMI ES60601-1:2005(60601 3rd edition)
- ◆ **EMI** : CE / FCC Class B ; Conduction & Radiation Met.
- ◆ **Protection** : OVP (Over Voltage Protection) 、 SCP (Short Circuit Protection) 、 OCP (Over Current Protection)
- ◆ High frequency design , less power consumption.
- ◆ Suitable for usage at Medical Equipment.
- ◆ Meet DoE / ErP (Stage 2) / MEPS V / NRCan

2. Input :

2.1 Voltage	Universal 100~240Vac, single phase
2.2 Frequency	50~ 60 Hz
2.3 Current	1.6A Max.
2.4 Inrush Current	80A Max. / 230Vac (Cold Start At 25 °C , Full Load)
2.5 Efficiency	Eff (av) \geq 87% (At 115 Vac & 230 Vac)
2.6 Power Consumption	Pi \leq 0.5 W (At 230Vac & No Load)

$$\text{※Eff (av)} = \frac{E1 + E2 + E3 + E4}{4}$$

E1=efficiency with 25% rated load ; E2= efficiency with 50% rated load
E3=efficiency with 75% rated load ; E4= efficiency with 100% rated load

3. Output :

3.1 DC Output	Voltage	+36.00V \pm 5%
	Current	1.81 A Max.
	Regulation	34.20Vmin. ~ 36.00Vtyp. ~ 37.80Vmax.
	Ripple & Noise	360mV Max.
	Total Power	65W Max.

Remark : For ripple & noise measurement, use a 20MHz bandwidth frequency oscilloscope, and add a 0.1 μ F multilayer Cap. and a Low ESR Electrolytic Cap. (10 μ F) at output connector terminals. (At nominal line voltage, Full Load)

4. Protection :

4.1 Over Voltage Protection (OVP)	(V out *150%).Max
4.2 Short Circuit Protection (SCP)	Automatic recovery after short-circuit fault being removed
4.3 Over Current Protection(OCP)	(I out *170%).Max

Remark : When Short Circuit Protection or Over Current Protection is activated, the power supply will shutdown automatically. Once the abnormal condition resulting in the failure being removed, the power supply will restart accordingly. When Over Voltage Protection is activated, the power supply will shutdown .

5. Safety 、 EMI and EMC Requirement :

5.1 Safety Requirement

- a. Safety : UL / cUL / TA License
ANSI/AAMI ES60601-1:2005(60601 3rd edition)
- b. Dielectric Strength : 10mA Max. Cut off current

(1)	Primary to Secondary	4000Vac for 1 Minute
(2)	Primary to Frame Ground	1500Vac for 1 Minute

c. Insulation Resistance :

(1)	Primary to Secondary	10 M OHMS for 500Vdc
(2)	Primary to Frame Ground	10 M OHMS for 500Vdc

5.2 EMI Requirement : CE / FCC Class B ; Conduction & Radiation Met.

5.3 Leakage Current : Less than 0.3mA

6. Operation and Environment Performance :

6.1 Temperature Range

Operating	+ 0 °C ~ + 40 °C
Storage	- 20 °C ~ + 80 °C

6.2 Humidity Range(Non-condensing)

Operating	20% ~ 80% RH
Storage	10% ~ 90% RH

6.3 Cooling : By natural air.

7. M.T.B.F. : 50,000 Hrs. (At 25°C , By MIL-HDBK-217F)

8. Mechanical :

8.1 Weight : 310 g Typical

8.2 Cable Type : Black UL1185 18 AWG
 (Wire + Plug)

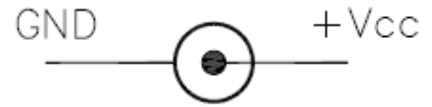
Plug : $\phi 5.5 \times \phi 2.1 \times 9.5 \text{mm}$
 (Tuning Forking & Cannelure)

8.3 Cable Length : 1500mm

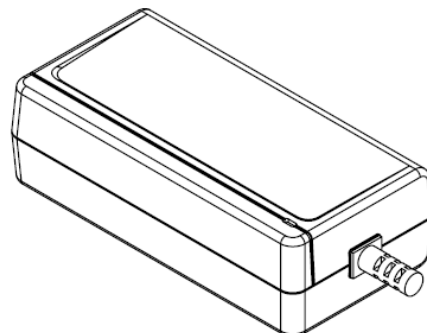
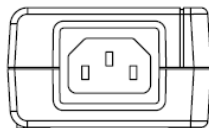
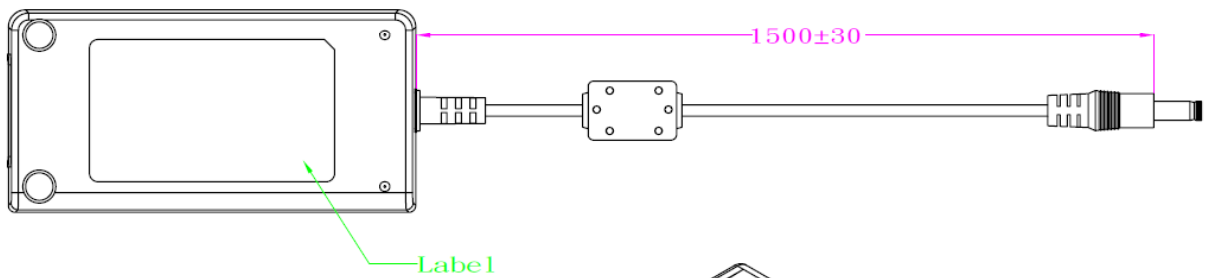
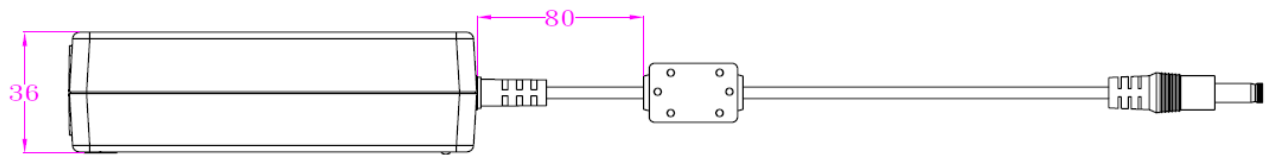
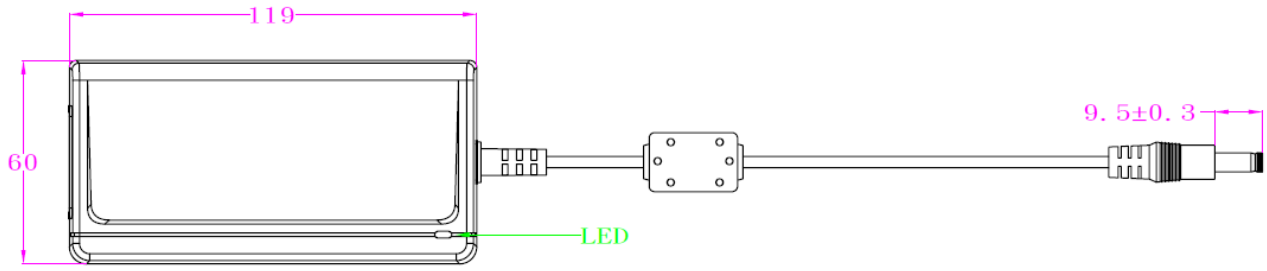
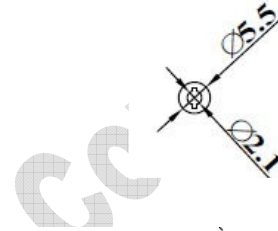
8.4 Case Dimension : 119mm(L)*60mm(W)*36mm(H)

8.5 Material Flammability : UL 94V-0

8.6 External Appearance : As drawing below (Scale \rightarrow mm)



Output Cable Plug Pin Assignment



A. Line Regulation Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
90Vac / 50 % Load	34.20 V ~ 37.80 V	36.22 V	36.16 V	35.95 V
115Vac / 50 % Load	34.20 V ~ 37.80 V	36.22 V	36.16 V	35.95 V
132Vac / 50 % Load	34.20 V ~ 37.80 V	36.22 V	36.16 V	35.95 V
180Vac / 50 % Load	34.20 V ~ 37.80 V	36.22 V	36.17 V	35.97 V
230Vac / 50 % Load	34.20 V ~ 37.80 V	36.22 V	36.17 V	35.97 V
264Vac / 50 % Load	34.20 V ~ 37.80 V	36.22 V	36.17 V	35.97 V

B. Efficiency Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac	87 % Min.	87.42 %	88.37 %	87.46 %
230Vac	87 % Min.	87.54 %	88.49 %	87.59 %

$$\text{Eff (av)} = \frac{E_1 + E_2 + E_3 + E_4}{4}$$

E1=efficiency with 25% rated load ; E2= efficiency with 50% rated load
E3=efficiency with 75% rated load ; E4= efficiency with 100% rated load

C. Load Regulation Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 0 % Load	34.20 V ~ 37.80 V	36.37 V	36.31 V	36.21 V
115Vac / 50 % Load	34.20 V ~ 37.80 V	36.22 V	36.16 V	35.95 V
115Vac / 100 % Load	34.20 V ~ 37.80 V	35.91 V	35.94 V	35.87 V
230Vac / 0 % Load	34.20 V ~ 37.80 V	36.35 V	36.31 V	36.23 V
230Vac / 50 % Load	34.20 V ~ 37.80 V	36.22 V	36.17 V	35.97 V
230Vac / 100 % Load	34.20 V ~ 37.80 V	35.92 V	35.94 V	35.89 V

D. Ripple & Noise Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	360mVpp Max.	74.6 mV	75.8 mV	74.8 mV
230Vac / 100 % Load	360mVpp Max.	75.6 mV	70.3 mV	77.6 mV

E. Inrush Current

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
230Vac / 100 % Load	80A Max	62.2 A	64.2 A	65.6 A

F. Over Current Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	(I out *170%).Max	129 %	118 %	132 %
230Vac / 100 % Load	(I out *170%).Max	126 %	119 %	131 %

G. Short Circuit Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	Auto Recovery	OK	OK	OK
230Vac / 100 % Load	Auto Recovery	OK	OK	OK

H. Input Power Consumption(No Load)

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
230Vac / 0 % Load	≤ 0.5 W	0.22 W	0.23 W	0.21 W

INSTALLATION INSTRUCTION

1. The switching power adapter is intended used for medical electrical equipment. There are not parts in this equipment, suitable for direct patient contact!

2. The classification of the equipment is:
 - Class I
 - No applied parts
 - Not AP or APG type
 - Protection class IPX0
 - Not intended for use in the presence of flammability anaesthetic mixture with air or with oxygen or nitrous oxide
 - Intended for continuous operation

3. The equipment must be reliably connected to protective earth terminal. The requirements of IEC/EN 60601-1 shall be fulfilled during the installation of this power adapter into an end system.

4. Environmental conditions:
 - Transportation temperature / humidity: -20°C to +80°C / 10% to 90%.
 - Storage temperature / humidity: -20°C to +80°C / 10% to 90%.
 - Operation temperature / humidity: 0 to +40°C / 5% to 95%.

5. The equipment has not been evaluated according to IEC60601-1-2. The EMC assessment shall be conducted for the end system configuration.

7. **Input Rating:** 100-240Vac, 50-60 Hz, 1.6-0.7A

Output Rating: 36Vdc, 1.81A

8. A certified power supply cord set has to be used with this equipment. The relevant national installation and/or equipment regulations shall be considered.

The power cord set shall have a power supply cord with conductors providing a cross-sectional area of 3G, 0.75mm² minimum.

9. "WARNING": To avoid risk of electric shock, this equipment must only be connected to a supply mains with protective earth by Input Connector"

10. Any inspection and maintenance tasks must be carried out only by authorized by the manufacturer service personnel.

11. "WARNING": To avoid risk of electric shock, this equipment must only be connected to a supply mains with protective earth by Appliance inlet "



12. "Do not dispose this product in the household waste, please, follow the respective national law for proper disposal."

13. "WARNING": Do not open this equipment without authorization of the manufacturer.