# 65W
# Medical Power Supply
# SPECIFICATION

| | | |
|---|---|---|
| **Model No.** | **:** | **ATM065-A240** |
| **Description** | **:** | **24Volts / 2.71Amps** |
| **Part No.** | **:** | |
| **Version** | **:** | **01** |
| **Date** | **:** | **09-May.-2016** |

| Approved | Reviewed | Checked | Prepared | Sales |
|---|---|---|---|---|
| | | 阿達特 2016.05.09 李智杰 | 阿達特 2016.05.09 李彩霞 | |

## 1. Feature：

- ♦ **Input** ： **Universal 100 ~ 240 Vac / 50~ 60 Hz Input, without any slide switch.**
- ♦ **Output** ： **+24V / 0~2.71A**
- ♦ **Case Dimension** ： **119 (L) *60 (W) * 36 (H) mm**
- ♦ **Efficiency** ： **Eff (av) ≧ 87%**
- ♦ **Safety** ： **UL / cUL / T-mark**
  **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) / 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 ºC, Full Load)** |
| **2.5 Efficiency** | **Eff (av) ≧ 87% (At 115 Vac & 230 Vac)** |
| **2.6 Power Consumption** | **Pi ≦ 0. 5 W ( At 230Vac & No Load)** |

$$※Eff_{(av)} = \frac{E_1 + E_2 + E_3 + E_4}{4}$$

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

## 3. Output：

| | | |
|---|---|---|
| **3.1 DC Output** | **Voltage** | **+24.00V ± 5%** |
| | **Current** | **2.71 A Max.** |
| | **Regulation** | **22.80Vmin. ~ 24.00Vtyp. ~ 25.20Vmax.** |
| | **Ripple & Noise** | **240mV Max.** |
| | **Total Power** | **65W Max.** |

**Remark : For ripple & noise measurement, use a 20MHz bandwidth frequency oscilloscope, and add a 0.1μF multilayer Cap. and a Low ESR Electrolytic Cap. (10 μF ) 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 / T-mark
ANSI/AAMI ES60601-1:2005(60601 3rd edition)

b. Dielectric Strength ： 10mA Max. Cut off current

| | | |
|---|---|---|
| (1) | Primary to Secondary | 4000Vac for 1 Minute |

c. Insulation Resistance ：

| | | |
|---|---|---|
| (1) | Primary to Secondary | 10 M OHMS for 500Vdc |

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

5.3 Leakage Current ： Less than 0.1mA

## 6. Operation and Environment Performance：

### 6.1 Temperature Range

| | |
|---|---|
| Operating | + 0 ºC ~ + 40 ºC |
| Storage | - 20 ºC ~ + 80 ºC |

### 6.2 Humidity Range(Non-condensing)

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

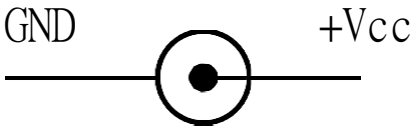
6.3 Cooling：By natural air.

## 7. M.T.B.F.：300,000Hrs.(Calculated Hours at 25℃ , By Telcordia SR-332)

**8.Mechanical :**

**8.1 Weight : 310 g Typical**

**8.2 Cable Type : Black UL1185 18AWG**
**( Wire + Plug )**
**Plug : ø5.5*ø2.5*9.5mm**
**( Cannelure )**



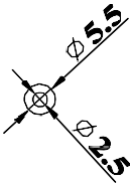

**Output Cable Plug Pin Assignment**

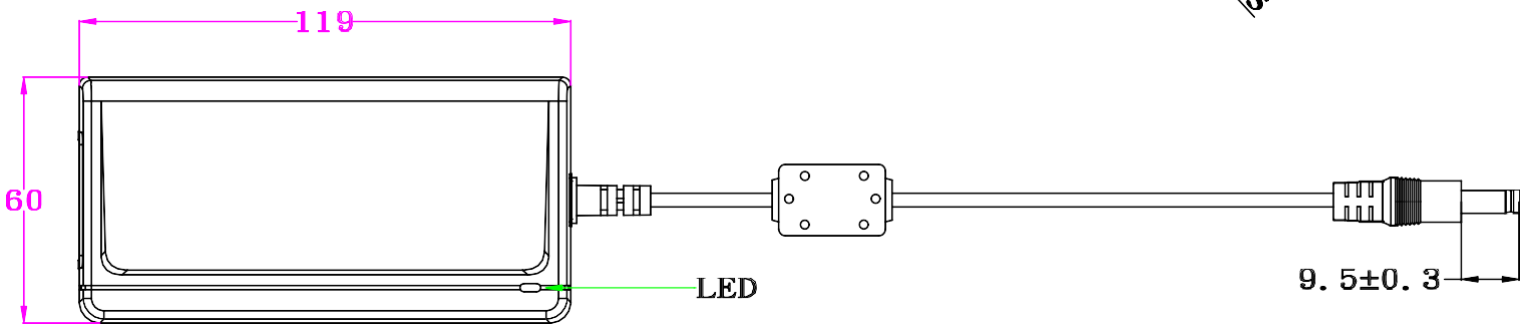
**8.3 Cable Length : 1500mm**

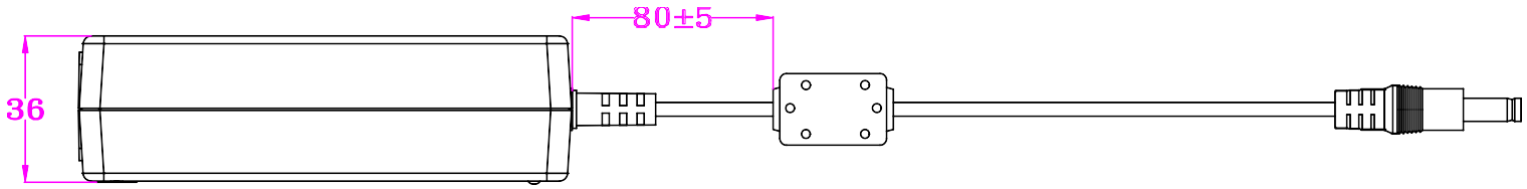
**8.4 Case Dimension : 119mm(L)*60mm(W)*36mm(H)**

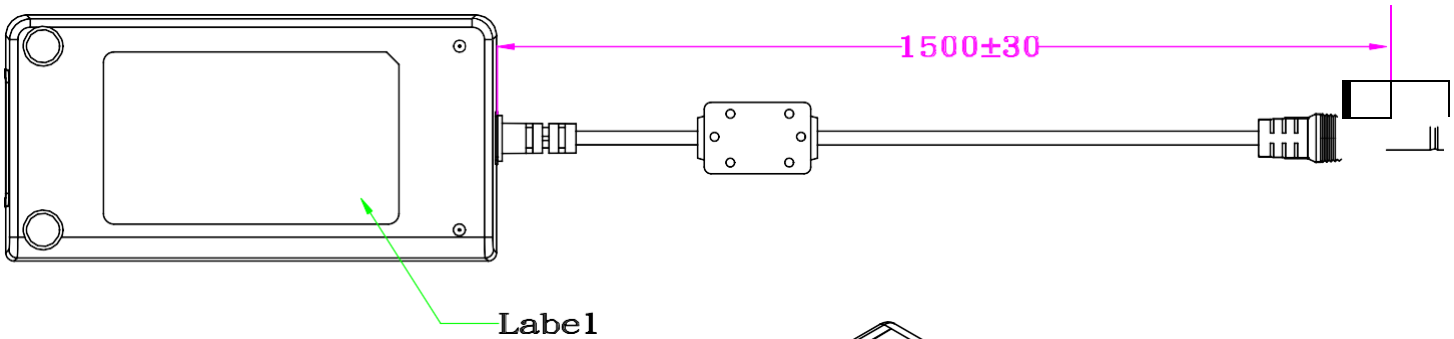
**8.5 Material Flammability : UL 94V-0**

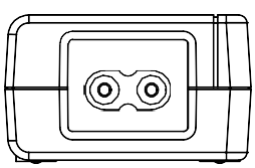
**8.6 External Apperance : As drawing below ( Scale → mm )**

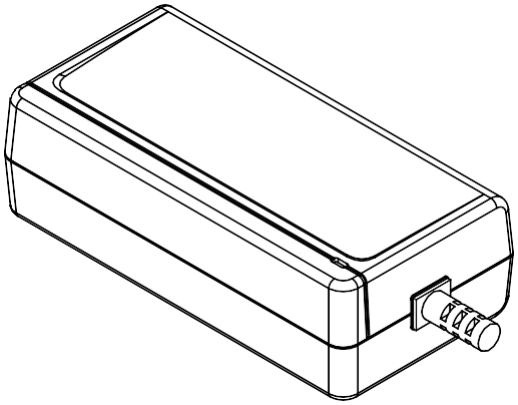




## A. Line Regulation Test

**Test Result ：**

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 90Vac / 50 % Load | 22.80 V ~ 25.20 V | 23.94 V | 23.92 V | 23.89 V |
| 115Vac / 50 % Load | 22.80 V ~ 25.20 V | 23.94 V | 23.92 V | 23.89 V |
| 132Vac / 50 % Load | 22.80 V ~ 25.20 V | 23.94 V | 23.92 V | 23.89 V |
| 180Vac / 50 % Load | 22.80 V ~ 25.20 V | 23.95 V | 23.94 V | 23.91 V |
| 230Vac / 50 % Load | 22.80 V ~ 25.20 V | 23.95 V | 23.94 V | 23.91 V |
| 264Vac / 50 % Load | 22.80 V ~ 25.20 V | 23.95 V | 23.94 V | 23.91 V |

## B. Efficiency Test

**Test Result ：**

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 115Vac | 87 % Min. | 87.32 % | 87.27 % | 87.36 % |
| 230Vac | 87 % Min. | 87.54 % | 87.49 % | 87.59 % |

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

**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 | 22.80 V ~ 25.20 V | 24.09 V | 24.07 V | 24.05 V |
| 115Vac / 50 % Load | 22.80 V ~ 25.20 V | 23.94 V | 23.92 V | 23.89 V |
| 115Vac / 100 % Load | 22.80 V ~ 25.20 V | 23.78 V | 23.76 V | 23.77 V |
| 230Vac / 0 % Load | 22.80 V ~ 25.20 V | 24.10 V | 24.08 V | 24.07 V |
| 230Vac / 50 % Load | 22.80 V ~ 25.20 V | 23.95 V | 23.94 V | 23.91 V |
| 230Vac / 100 % Load | 22.80 V ~ 25.20 V | 23.79 V | 23.77 V | 23.79 V |

## D. Ripple & Noise Test

**Test Result ：**

| Test condition | Spec. | Reading 1 | Reading 2 | Reading 3 |
|---|---|---|---|---|
| 115Vac / 100 % Load | 240mVpp Max. | 71.1 mV | 68.8 mV | 66.9 mV |
| 230Vac / 100 % Load | 240mVpp Max. | 75.1 mV | 70.5 mV | 72.5 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

**Manufacturer: Adapter Technology Co., Ltd.**

**Model ATM065-A120, ATM065-A150, ATM065-A180, ATM065-A190, ATM065-A240 ATM065-A360**

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. Circuit diagrams, descriptions and component parts list will be made available only upon request when servicing is required. Please, contact the address below for related information.
   Adapter Technology Co., Ltd.
   6F-9, No.258, Liancheng Rd., Zhonghe District, New Tapipei City 235, Taiwan (R.O.C)

3. The classification of the equipment is:
   - Class II
   - 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

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.

6. **Input Rating:** 100-240Vac, 50-60 Hz, 1.6-0.7A
   **Output Rating:** See below

| MODEL | O/P VOLTAGE | O/P CURRENT |
|---|---|---|
| ATM065-A120 | +12Vdc | 5A |
| ATM065-A150 | +15Vdc | 4.34A |
| ATM065-A180 | +18Vdc | 3.62A |
| ATM065-A190 | +19Vdc | 3.43A |
| ATM065-A240 | +24Vdc | 2.71A |
| ATM065-A360 | +36Vdc | 1.81A |

7. 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 2G, 0.75mm$^2$ minimum.

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

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

10. "WARNING": Do not modify this equipment without authorization of the manufacturer."

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

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