



120W

Medical Power Supply

SPECIFICATION

Model No.	:	ATM120-A240
Description	:	24 Volts / 5 Amps
Part No.	:	
Version	:	01
Date	:	19—May—2016

Approved	Reviewed	Checked	Prepared	Sales



1. Feature :

- ◆ **Input** : Universal 100 ~ 240 Vac / 50 ~ 60 Hz Input, without any slide switch.
- ◆ **Output** : +24V / 0 ~ 5A
- ◆ **Case Dimension** : 175.2 (L) * 74 (W) * 42 (H) mm
- ◆ **Efficiency** : Eff (av) $\geq$ 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), OTP (Over Temperature Protection)
- ◆ High frequency design, less power consumption.
- ◆ Suitable for usage at Medical.
- ◆ Meet DoE / ErP (Stage 2) / MEPS V

2. Input :

2.1 Voltage	Universal 100 - 240Vac, single phase.
2.2 Frequency	50 - 60 Hz
2.3 Current	1.5 A Max.
2.4 Inrush Current	100 A 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)
2.7 Power Factor (PF)	Pi $\geq$ 0.9 (At Full load)

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

E_1 =efficiency with 25% rated load ; E_2 = efficiency with 50% rated load
 E_3 =efficiency with 75% rated load ; E_4 = efficiency with 100% rated load

3. Output :

3.1 DC Output	Voltage	+24.00 V $\pm$ 5%
	Current	5 A Max.
	Regulation	22.8 Vmin. ~ 24.0 Vtyp. ~ 25.2 Vmax.
	Ripple & Noise	480 mV Max.
	Total Power	120W 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)	Vout * 150% Max.
4.2 Short Circuit Protection (SCP)	Automatic recovery after short-circuit fault being removed
4.3 Over Current Protection(OCP)	Iout * 170% Max.
4.4 Over Temperature Protection (OTP)	Auto recovery

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 latch.

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
(2)	Primary to Frame Ground	2000Vac 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 0.1 mA.

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. : 300,000Hrs.(Calculated Hours at 25°C , By Telcordia SR-332)

8. Mechanical :

8.1 Weight : 700g Typical

8.2 Cable Type : Black UL2464 16AWG*4C
(Wire + Plug)

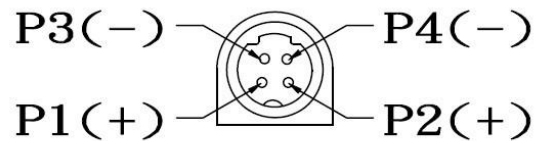
Plug : 4Pin Din

8.3 Cable Length : 1500mm

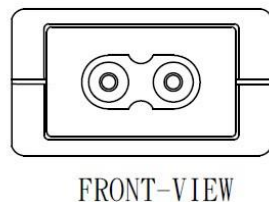
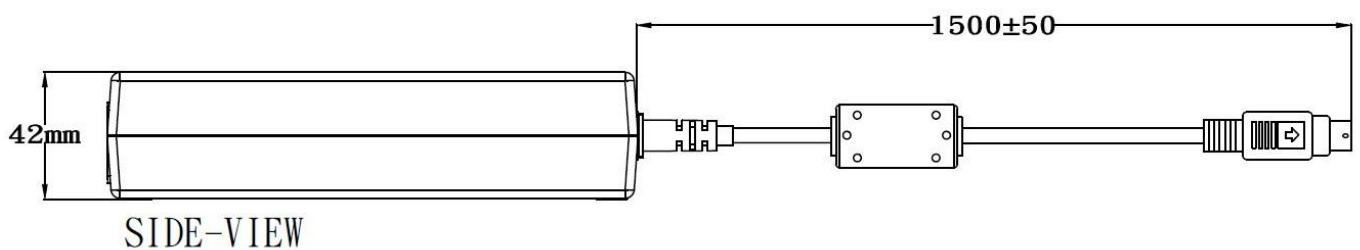
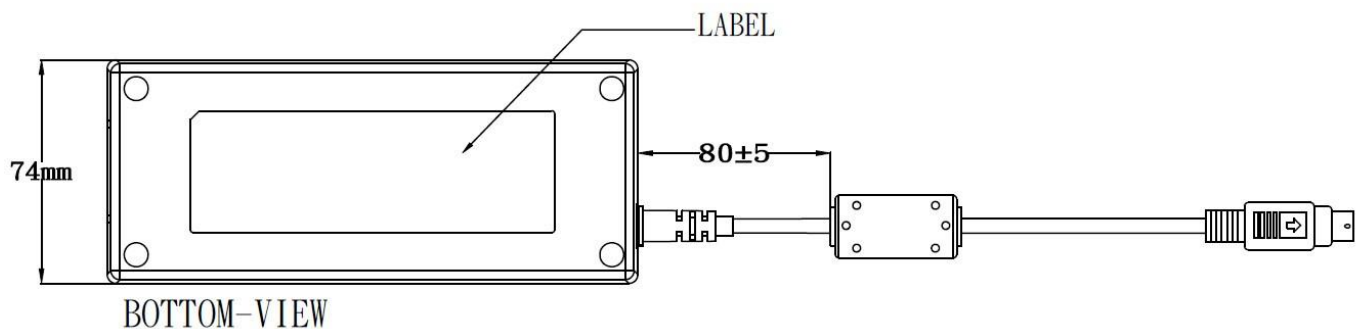
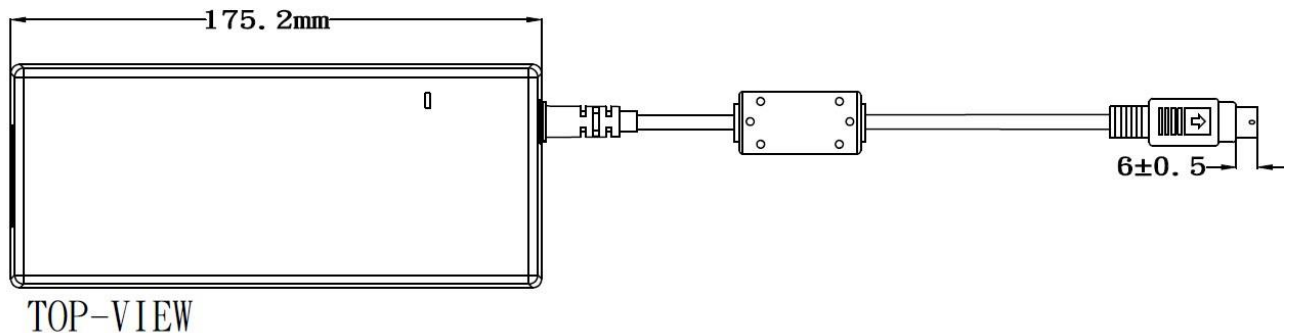
8.4 Case Dimension : 175.2mm(L)*74mm(W)*42mm(H)

8.5 Material Flammability : UL 94V-0

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



Output Cable Plug Pin Assignment



A. Line Regulation Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
90Vac / 50 % Load	22.8 V ~ 25.2V	23.72V	23.87V	23.92V
115Vac / 50 % Load	22.8 V ~ 25.2V	23.72V	23.87V	23.92V
132Vac / 50 % Load	22.8 V ~ 25.2V	23.72V	23.87V	23.92V
180Vac / 50 % Load	22.8 V ~ 25.2V	23.72V	23.87V	23.92V
230Vac / 50 % Load	22.8 V ~ 25.2V	23.72V	23.87V	23.92V
264Vac / 50 % Load	22.8 V ~ 25.2V	23.72V	23.87V	23.92V

B. Efficiency Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac	87 % Min.	89.69%	89.14%	89.31%
230Vac	87 % Min.	89.14%	88.48%	88.61%

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

E_1 =efficiency with 25% rated load ; E_2 = efficiency with 50% rated load
 E_3 =efficiency with 75% rated load ; E_4 = efficiency with 100% rated load

C. Load Regulation Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 0 % Load	22.8 V ~ 25.2V	24.00V	24.13V	24.25V
115Vac / 50 % Load	22.8 V ~ 25.2V	23.73V	23.87V	23.92V
115Vac / 100 % Load	22.8 V ~ 25.2V	23.45V	23.62V	23.76V
230Vac / 0 % Load	22.8 V ~ 25.2V	23.99V	24.12V	24.25V
230Vac / 50 % Load	22.8 V ~ 25.2V	23.72V	23.87V	23.92V
230Vac / 100 % Load	22.8 V ~ 25.2V	23.45V	23.61V	23.75V

D. Ripple & Noise Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	480 mV Max.	102 mV	112 mV	113mV
230Vac / 100 % Load	480 mV Max.	104 mV	118 mV	115mV

E. Inrush Current

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
230Vac / 100 % Load	100A Max.	79 A	77 A	78 A

F. Over Voltage Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	Vout*150% Max.	119%	116%	117%
230Vac / 100 % Load	Vout*150% Max.	119%	116%	116%

G. Over Current Protection

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	Iout*170% Max.	132%	128%	130%
230Vac / 100 % Load	Iout*170% Max.	131%	127%	131%

H. 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

I. Input Power Consumption(No Load)

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
230Vac / 0 % Load	≤ 0.5 W	0.33W	0.34W	0.39W

J. Power Factor

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	≥ 0.9	0.99	0.99	0.99
230Vac / 100 % Load	≥ 0.9	0.95	0.95	0.95