

Medical Power Supply

24.0 Volts | 2.71 Amps

- Input: Universal 100 ~ 240 Vac / 50 ~ 60 Hz Input, without any slide switch.
- Output: +24.0V / 0~2.71A
- Case Dimension: 119 (L) * 60 (W) * 36 (H) mm
- Efficiency: Eff (av) ≥ 88%
- Safety: I.T.E: PSE/ CB
Medical: UL / cUL/ T-mark
- EMI: CE / FCC (conduction & radiation Class B)
- Protection: OVP (Over Voltage Protection) | SCP (Short Circuit Protection) | OCP (Over Current Protection)
- Suitable for usage at I.T.E., industrial controller, medical
- Meet DoE Level VI/ CoC Tier 2 / ErP (Lot 7)

Item	Value Unit Remarks
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1. Input

Voltage	Universal 100~240Vac, single phase
Frequency	50 - 60 Hz
Current	1.6A Max.
Inrush Current	80A Max. / 240Vac (Cold start at 25 °C full load) (ac source chroma 6530)
Efficiency	Eff (av) ≥ 88% (At 115 Vac & 230 Vac) Eff ≥ 79% @ 10% load (at 230 Vac)
Power Consumption	Pi ≤ 0.21 W (At 230 Vac & 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

2. Output

DC output	
Voltage	+24.00V ±5%
Current	2.71A Max.
Regulation	22.80Vmin. ~ 24.00Vtyp. ~ 25.20Vmax.
Ripple & Noise	240 mVpp Max.
Total Power	65.04W 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. (47µF) at output connector terminals. (At nominal line voltage, Full Load)

3. Protection

Over Voltage Protection (OVP)	Vout * 150% Max., latch off..
Short Circuit Protection (SCP)	Autorecovery.
Over Current Protection(OCP)	(I out *170%) Max., autorecovery.

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4. Safety Requirement

Dielectric Strength		Cut off current 10mA
1	Primary to Secondary	4000Vac for 1 Minute
Insulation Resistance		
1	Primary to Secondary	10 M Ohm for 500Vdc
Leakage Current		Less than 0.1mA

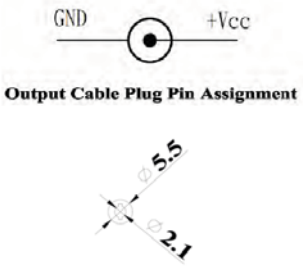
5. Operation and Environment Performance

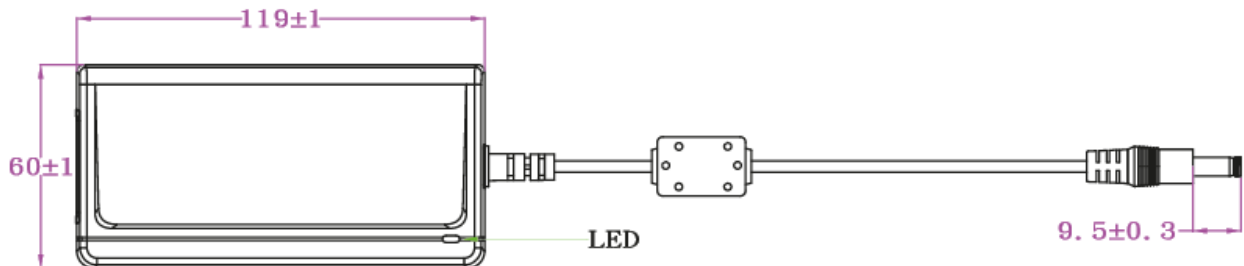
Temperature Range		
	operating	-20°C ~ +40° C
	storage	-20°C ~ +80° C
Humidity Range(Non-condensing)		
	operating	20% ~ 80% RH
	storage	10% ~ 90% RH
Cooling		By natural air

6. M.T.B.F.

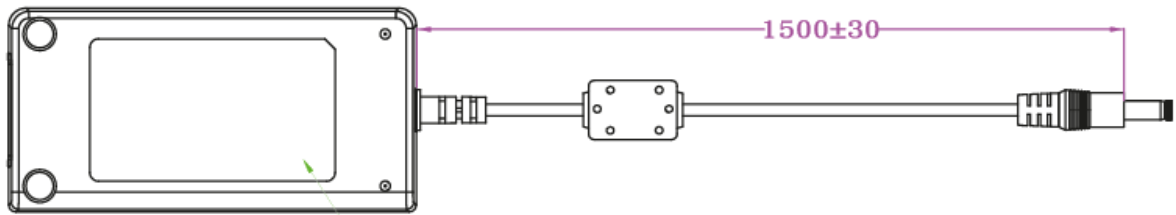
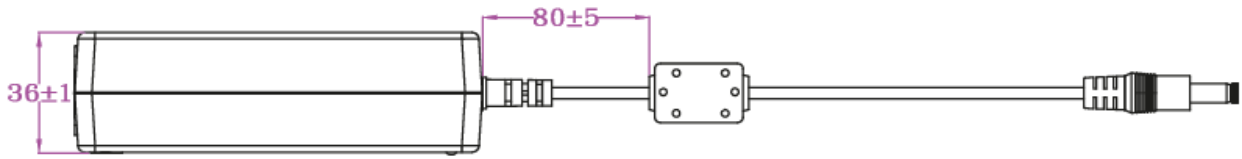
300,000Hrs.(Calculated Hours at 25°,By Telcordia SR-332)

7. Mechanical

Weight	310 g Typical	 <p>Output Cable Plug Pin Assignment</p>
Cable Type	Black UL1185 18AWG (Wire + Plug) Plug: Ø5.5+Ø2.1+9.5mm (Tuning Fork & Cannelure)	
Cable Length	1500mm	
Case Dimension	119mm(L)*60mm(W)*36mm(H) (±1mm)	
Material Flammability	UL 94V-1	
External Apperance	As drawing below (Scale - mm)	

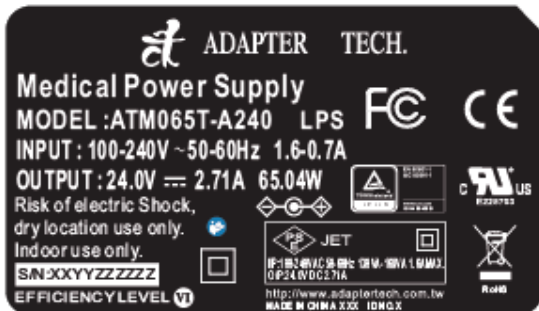
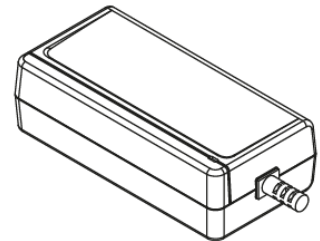
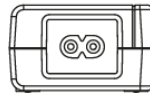


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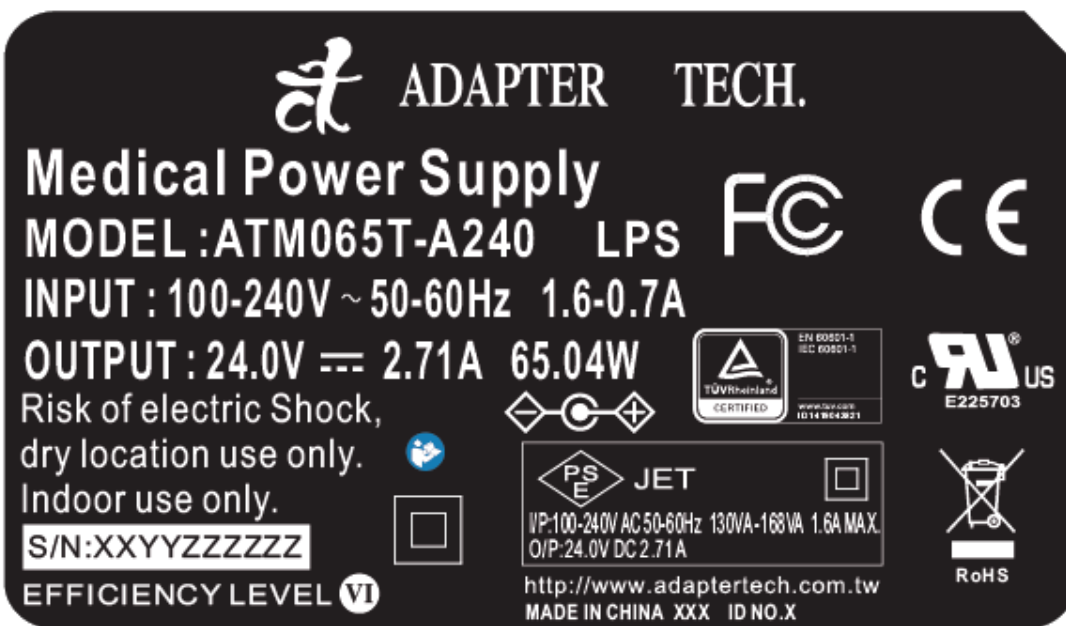
Label

100%



Label Materials	Metalized Polyester Labe (Silver Gloss)
Label Color	Black Background with Silver Printing Manual/ Booklet is blue background with silver Printing
Label Dimensions	70.8mm (L) * 40.8mm(W) ±0.2mm
Label Thickness	#75

200%



"XXX"
Label supplier's code
It is accurate that the number of words depends on the real finished product.

ID NO. "X"
Manufacturer's code.
It is accurate that the number of words depends on the real finished product.

S/N: XXYYZZZZZ
XX= Year (2 yard)
16: 2016
YY= Week (2 Yard)
ZZZZZ= Serial number (6yard)

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Line Regulation Test

Test Result:

Test Condition	Spec.	Reading 1	Reading 2	Reading 3
90Vac / 50 % Load	22.8 V ~ 25.2V	23.96 V	23.72V	23.95V
115Vac / 50 % Load	22.8 V ~ 25.2V	23.96 V	23.72V	23.95V
132Vac / 50 % Load	22.8 V ~ 25.2V	23.96 V	23.72V	23.95V
180Vac / 50 % Load	22.8 V ~ 25.2V	23.96 V	23.72V	23.95V
230Vac / 50 % Load	22.8 V ~ 25.2V	23.96 V	23.72V	23.95V
264Vac / 50 % Load	22.8 V ~ 25.2V	23.96 V	23.72V	23.95V

Efficiency Test

Test Result:

Test Condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac	88 % Min.	89.10 %	89.07%	89.10 %
230Vac	88 % Min.	89.38 %	89.15%	89.47 %
230Vac @10%load	79 % Min.	87.15 %	88.15%	87.38 %

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

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

Load Regulation Test

Test Result:

Test Condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 0 % Load	22.8 V ~ 25.2V	24.08V	23.96V	24.09 V
115Vac / 50 % Load	22.8 V ~ 25.2V	23.96 V	23.72V	23.95 V
115Vac / 100 % Load	22.8 V ~ 25.2V	23.83 V	23.46 V	23.82V
230Vac / 0 % Load	22.8 V ~ 25.2V	24.08V	23.96V	24.09 V
230Vac / 50 % Load	22.8 V ~ 25.2V	23.96 V	23.72V	23.95 V
230Vac / 100 % Load	22.8 V ~ 25.2V	23.83 V	23.46 V	23.82V

Ripple & Noise Test

Test Result:

Test Condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	240mV Max.	63.4 mV	60.8 mV	65.4 mV
230Vac / 100 % Load	240mV Max.	61.2 mV	62.1 mV	63.3 mV

Remark : For ripple & noise measurement, use a 20MHz bandwidth frequency oscilloscope, and add a 0.1µF multilayer Cap. and a Low ESR Electrolytic Cap. (47 µF) at output connector terminals. (At nominal line voltage, full load)

Inrush Current

Test Result:

Test Condition	Spec.	Reading 1	Reading 2	Reading 3
240 Vac / 100 % Load	80A Max	63 A	65 A	64 A

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Over Current Protection
Test Result:

Test Condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100% Load	(I _{out} * 170%) Max.	122 %	120 %	121 %
230Vac / 100% Load	(I _{out} * 170%) Max.	121 %	122 %	123 %

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

Input Power Consumption(No Load)
Test Result:

Test Condition	Spec.	Reading 1	Reading 2	Reading 3
230Vac / 0 % Load	≤ 0.21 W	0.05 W	0.05 W	0.05 W

Efficiency Test Report

- A. Model Number** : ATM065T-A240(24.0V/2.71A)
- B. DC Power Cord** : UL1185 , 18AWG ,1.5M
- C. Efficiency** :
- LEVEL VI** EFF(av)≥ 88%&Eff ≥ 79% @10% Load
- D. NO Load Power Consumption** :
- LEVEL VI** 0.21W max.
- E. Testing Dequpment** :
- 1. AC Power Source** : " Chroma 61605
- 2. Electronic Load** : " PRODIGIT " 3311F
- 3. Power Meter** : "YOKOGAWA " WT310
- 4. Digital Meter** : " FLUKE " 179
- F. AC Input Voltage** : 115Vac/60Hz

Reported	Load Conditions						
	100%* I ₀	75%* I ₀	50%* I ₀	25%* I ₀	10%* I ₀	0%* I ₀	
Rms Output Current(mA)	2710mA	2033mA	1355mA	678mA	271mA	0mA	
Rms Output Voltage(V)	23.600V	23.690V	23.810V	23.900V	23.960V	23.990V	
Active Output Power(W)	63.96W	48.15W	32.26W	16.19W	6.49W	0.00W	
Rms Input Voltage(V)	115V	115V	115V	115V	115V	115V	
Rms Input Current(A)	1.188A	0.937A	0.680A	0.381A	0.169A	0.016A	
Rms Input Power(W)	71.82W	53.68W	35.68W	17.89W	7.32W	0.06W	
Total Harmonic Distortion of the input current	162.00%	177.50%	194.32%	217.72%	239.97%	154.21%	
True Power Factor	0.521	0.494	0.452	0.404	0.378	0.065	
Power Consumed by UUT(W)	7.86W	5.53W	3.42W	1.70W	0.83W	0.06W	
Efficiency	89.05%	89.70%	90.42%	90.51%	88.70%	*	
Average Efficiency	89.92%						*

G. AC Input Voltage : 230Vac/50Hz

Reported	Load Conditions						
	100%* I ₀	75%* I ₀	50%* I ₀	25%* I ₀	10%* I ₀	0%* I ₀	
Rms Output Current(mA)	2710mA	2033mA	1355mA	678mA	271mA	0mA	
Rms Output Voltage(V)	23.580V	23.670V	23.780V	23.880V	23.960V	23.990V	
Active Output Power(W)	63.90W	48.11W	32.22W	16.18W	6.49W	0.00W	
Rms Input Voltage(V)	230V	230V	230V	230V	230V	230V	
Rms Input Current(A)	0.713A	0.551A	0.399A	0.209A	0.093A	0.024A	
Rms Input Power(W)	70.78W	53.37W	35.53W	17.92W	7.35W	0.08W	
Total Harmonic Distortion of the input current	223.85%	239.25%	253.31%	276.62%	365.71%	456.32%	
True Power Factor	0.428	0.417	0.399	0.368	0.335	0.022	
Power Consumed by UUT(W)	6.88W	5.26W	3.31W	1.74W	0.86W	0.06W	
Efficiency	90.32%	90.19%	90.76%	90.42%	88.67%	*	
Average Efficiency	90.42%						*

Tester :Sun

INSTALLATION INSTRUCTION

Manufacturer: ADAPTER TECHNOLOGY CO LTD
 Models: ATM065T-Ax (where x = 120, 150, 180, 190, 240,300,360 or 480)

- The switching power supply is intended used for medical electrical equipment. The equipment has not been evaluated applied parts that suitable for direct patient contact! It shall be evaluated for the end system configuration.
- 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.

3. Environmental conditions:

Transportation temperature, humidity, pressure	-20 to +80°C / 10% ~ 90 %, 540 ~ 1060 hPa
Storage temperature, humidity, pressure	-20 to +80°C / 10% ~ 90 %, 540 ~ 1060 hPa
Operation temperature, humidity, pressure	0°C ~ 40°C / 20% ~ 80 %, 540 ~ 1060 hPa

- Although the equipment has been evaluated according to IEC60601-1-2.The EMC assessment shall be conducted for the end system configuration.

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


6. The output load shall not exceed the rating:
 Output:

Model	O/P Voltage	O/P Current
ATM065T-A120	12.0V	5.0A
ATM065T-A150	15.0V	4.34A
ATM065T-A180	18.0V	3.62A
ATM065T-A190	19.0V	3.43A
ATM065T-A240	24.0V	2.71A
ATM065T-A300	30.0V	2.17A
ATM065T-A360	36.0V	1.81A
ATM065T-A480	48.0V	1.36A

- Any inspection and maintenance tasks must be carried out only by authorized by themanufacturer service personnel.

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

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

10.  "The equipment intend indoor use only"

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11. The classification of the equipment is:

- Class II
- The equipment has not been evaluated applied parts
- Not AP or APG type
- Protection class IPX0
- Not intended for use in the presence of flammability an aesthetic mixture with air or with oxygen or nitrous oxide
- Intended for continuous operation

12. The equipment provided with one fuse (F1) on line conductor, fuse rated T3.15AL, 250Vac, size approximately 8.5 x 4.0 mm.

13. "WARNING" Long cord for Strangulation hazard.

14. Expected service life of the power supply: 100,000 hours.

15.  Upper limit of temperature. Indicates the upper limit of temperature to which the medical device can be safety exposed. The upper limit of temperature shall be indicated adjacent to the upper horizontal line.

