

Customer :

Version : 01

Issued Stamp :

Customer's Approval Signature

**90W
AC ADAPTER
SPECIFICATION**

Part No. : **MDS090-P240 (Level VI)**

Description : **24 Volts / 3.75 Amps**

Part No. :

Version : **01**

Date : **30-Oct.-2015**

Approved	Reviewed	Checked	Prepared	Sales

■ Customer :
■ Part No. : MDS090-P240
■ Original Documents Content : Spec. 10 Pages, Attachment 0 Pages

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1. Feature :

- ◆ **Input** : Universal 100 ~ 240 Vac / 50 ~ 60 Hz Input, without any slide switch.
- ◆ **Output** : +24V / 3.75A
- ◆ **Case Dimension** : 151 (L) * 64 (W) * 36 (H) mm
- ◆ **Efficiency** : Eff (av) $\geq$ 88 %
- ◆ **Safety** : UL / cUL / GS / CB / PSE / BSMI / RCM / KC / CCC
- ◆ **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 Telecommunication, Computer, Industrial Controller, & OA System.
- ◆ Meet DoE Level VI
- ◆ Meet LPS

2. Input :

2.1 Voltage	Universal 100~240Vac, single phase
2.2 Frequency	50 ~ 60 Hz
2.3 Current	1.2A Max.
2.4 Inrush Current	60A Max. / 230Vac (Cold Start At 25 °C , Full Load)
2.5 Efficiency	Eff (av) $\geq$ 88 % (At 115 Vac & 230 Vac)
2.6 Power Consumption	Pi $\leq$ 0.21W (At 230Vac & No Load)
2.6 Power Factor(PF)	PF $\geq$ 0.9 (At Full Load)

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

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

3. Output :

3.1 DC Output	Voltage	+24.00V $\pm$ 5%
	Current	3.75A Max.
	Regulation	22.80Vmin. ~ 24.00typ. ~ 25.20Vmax.
	Ripple & Noise	240 mV Max.
	Total Power	90W 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 *(150% 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 / GS / CB / PSE / BSMI / RCM / KC / CCC
b. Dielectric Strength : Cut off current 10mA

(1)	Primary to Secondary	3000Vac 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 3.5mA
5.4 Grounding Test : Resistance 0.1ohm Max. @ 25A

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

8. Mechanical :

8.1 Weight : 460 g Typical

8.2 Cable Type : Black UL1185 AWG18
(Wire + Plug)

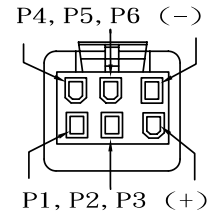
Plug : JS4201,6Pin

8.3 Cable Length : 1500mm

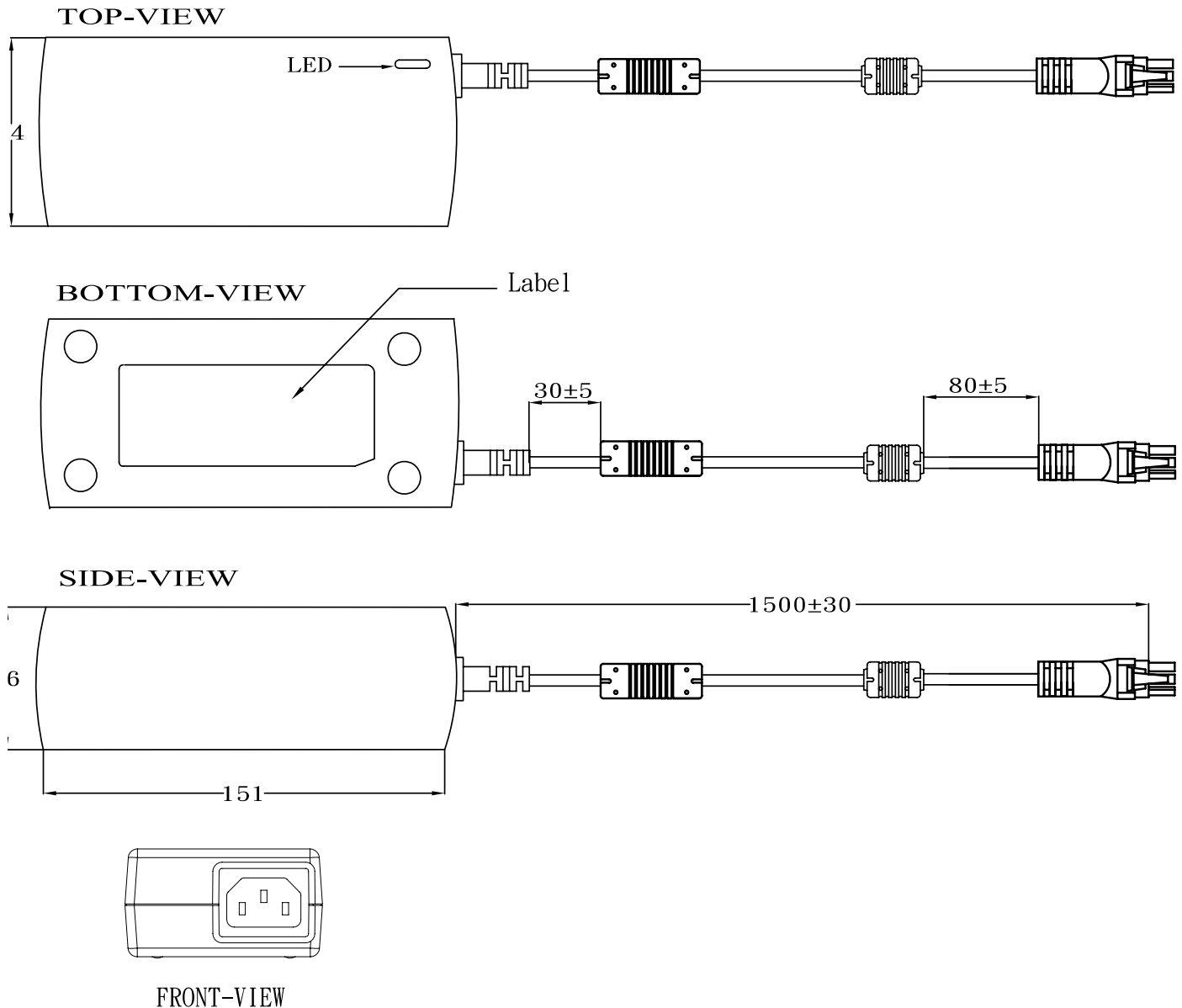
8.4 Case Dimension : 151mm(L)*64mm(W)*36mm(H)

8.5 Material Flammability : UL 94V-0

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



Output Cable Plug Pin Assignment



8.7 Spec. Label Materials : Metalized Polyester Label (Silver Gloss)
Color : Black Background with Silver Printing
Label Dimension : 91.5mm(L)*29.3mm(W)+/-0.1mm
Label Thickness : 75#

100%



"XXX"

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

160%



ID NO. "X"

Manufacturer's code.
It is accurate that the number of words depends on the real finished product.

Label Part No.:
REV.:

A. Line Regulation Test

Test Result :

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

B. Efficiency Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac	88% Min.	90.2%		
230Vac	88 % Min.	90.14%		

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

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	22.80V~ 25.20V	24.25V		
115Vac / 50 % Load	22.80V~ 25.20V	23.95V		
115Vac / 100 % Load	22.80V~ 25.20V	23.76V		
230Vac / 0 % Load	22.80V~ 25.20V	24.25V		
230Vac / 50 % Load	22.80V~ 25.20V	23.95V		
230Vac / 100 % Load	22.80V~ 25.20V	23.75V		

D. Ripple & Noise Test

Test Result :

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	240mVpp Max.	92mV		
230Vac / 100 % Load	240mVpp Max.	80mV		

E. Inrush Current**Test Result :**

Test condition	Spec.	Reading 1	Reading 2	Reading 3
230Vac / 100 % Load	60A Max	55A		

F. Over Current Protection**Test Result :**

Test condition	Spec.	Reading 1	Reading 2	Reading 3
115Vac / 100 % Load	I _{out} *(130% Max.)	123%		
230Vac / 100 % Load	I _{out} *(130% Max.)	122%		

G. Short Circuit Protection**Test Result :**

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

H. Input Power Consumption(No Load)**Test Result :**

Test condition	Spec.	Reading 1	Reading 2	Reading 3
230Vac / 0 % Load	$\leq$ 0.21 W	0.19W		

I. Power Factor**Test Result :**

Test condition	Spec.	Reading 1	Reading 2	Reading 3
230Vac / 100 % Load	$\geq$ 0.9	0.953		

Efficiency Test Report

- A. **Part Number** : MDS090-P240
- B. **DC Power Cord** : UL1185,18AWG,1.5M,車溝
- C. **Average Efficiency** :
LEVEL VI : 88%Min.
- D. **NO Load Power Consumption** :
LEVEL VI : 0.21W max.
- E. **Testing equipment** :
1. **AC Power Source** : " EXTECH " 6900
2. **Electronic Load** : " PRODIGIT " 3302F
3. **Power Meter** : " Zentech " WT210
4. **Digital Meter** : " PRODIGIT " 3302F
- F. **AC Input Voltage** : 115Vac/60Hz

Load Conditions	100% * I ₀	75% * I ₀	50% * I ₀	25% * I ₀	0% * I ₀
Reported Quantity					
Rms Output Current(mA)	3750mA	2813mA	1875mA	938mA	0mA
Rms Output Voltage(V)	23.73V	23.83V	23.93V	24.05V	24.25V
Active Output Power(W)	89.00W	67.03W	44.88W	22.55W	0.00W
Rms Input Voltage(V)	115V	115V	115V	115V	115V
Rms Input Current(A)	0.873A	0.654A	0.442A	0.427A	0.016A
Rms Input Power(W)	99.45W	74.28W	49.65W	24.87W	0.14W
Voltage T.H.D.(%)					
True Power Factor	0.994	0.990	0.978	0.508	0.090
Power Consumed by UUT(W)	10.45W	7.25W	4.77W	2.32W	0.14W
Efficiency	89.49%	90.24%	90.39%	90.67%	*
Average Efficiency	90.20%				*

- G. **AC Input Voltage** : 230Vac/50Hz

Load Conditions	100% * I ₀	75% * I ₀	50% * I ₀	25% * I ₀	0% * I ₀
Reported Quantity					
Rms Output Current(mA)	3750mA	2813mA	1875mA	938mA	0mA
Rms Output Voltage(V)	23.71V	23.81V	23.91V	24.03V	24.25V
Active Output Power(W)	88.91W	66.96W	44.84W	22.53W	0.00W
Rms Input Voltage(V)	230V	230V	230V	230V	230V
Rms Input Current(A)	0.450A	0.346A	0.243A	0.250A	0.024A
Rms Input Power(W)	98.38W	74.22W	50.14W	24.94W	0.19W
Voltage T.H.D.(%)					
True Power Factor	0.953	0.934	0.899	0.434	0.037
Power Consumed by UUT(W)	9.47W	7.26W	5.30W	2.41W	0.19W
Efficiency	90.40%	90.25%	89.47%	90.44%	*
Average Efficiency	90.14%				*

Tester : Ian WU