

MXD40 SERIES

MULTI -OUTPUT

2 X 3.5 Inch AC-DC POWER SUPPLIES

UNIVERSAL INPUT RANGE
UP TO 40Watts



FEATURES

- 0.15 WATT LOW STANDBY POWER CONSUMPTION
- ULTRA LOW CROSS REGULATION UNDER 1.5%
- WIDE INPUT VOLTAGE RANGE 85 TO 264VAC, 47 TO 63HZ
- BUILT-IN CLASS B EMI FILTER
- OUTPUT VOLTAGE ADJUSTABLE (OUTPUT 1 ONLY)
- 4000VAC INPUT TO OUTPUT 2MOPP INSULATION
- PROTECTION TYPE CLASS I AND CLASS II
- LOW LEAKAGE CURRENT UNDER 75μA
- OPERATING ALTITUDE 5000M
- 5 YEAR WARRANTY
- ANSI/AAMI ES60601-1, EN60601-1, & IEC60601-1 3rd EDITION SAFETY APPROVALS
- CE MARKED: IEC60601-1-2 ED4.0
- COMPLIANT TO RoHS II & REACH

APPLICATIONS

- MEDICAL EQUIPMENT
- WIRELESS NETWORK
- TELECOM/DATACOM
- INDUSTRY CONTROL SYSTEM
- MEASUREMENT EQUIPMENT
- SEMICONDUCTOR EQUIPMENT

4000VAC ISOLATION	OPP	SCP	OVP	LOW STANDBY POWER	LOW CROSS REG.
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PART NUMBER STRUCTURE

MAD	40	U	□	□	□	□	□	B	-	xx	yy
Series number	Output Power (W)	Input Voltage (VAC)	Output Quantity	Output Voltage 1 (VDC)	Output Voltage 2 (VDC)	Output Voltage 3 polarity	Output Voltage 3 (VDC)	Protection Type		Vo2 Voltage Code	Vo3 Voltage Code
				Vo1	Vo2	Vo3 (Triple only)					
MAD: Open type		U: Universal	D: Dual	3: 5V	1: 2.5V	M: Minus	1: 2.5V	B: CLASS II			
MUD: U chassis type		85 ~ 264VAC	T: Triple	4: 7.5V	2: 3.3V	_: Positive	2: 3.3V	No: CLASS I			
MED: Enclosed type				5: 9V	3: 5V		3: 5V				
MDD: Din rail type				6: 12V	X: refer to		4: 7.5V				
				7: 15V	Suffix xx		5: 9V				
				8: 18V			6: 12V				
				9: 24V			7: 15V				
				0: 28V			8: 18V				
							9: 24V				
							y: refer to				
							Suffix yy				

TECHNICAL SPECIFICATION

All specifications are typical at 230VAC input, full load and 25°C otherwise noted

Model Number	Output 1			Output 2			Output 3		Max. Output Power W	Efficiency %
	Voltage VDC	Current (Normal) A	Current (MAX) A	Voltage VDC	Current (Normal) A	Current (MAX) A	Voltage VDC	Current (MAX) A		
MAD40UD32B MUD40UD32B MED40UD32B MDD40UD32B	+5	5	8	+3.3	4	6			40	89.5
MAD40UD63B MUD40UD63B MED40UD63B MDD40UD63B	+12	2.1	3.34	+5	4	6			40	89
MAD40UD62B MUD40UD62B MED40UD62B MDD40UD62B	+12	2.1	3.34	+3.3	4	6			40	90
MAD40UD73B MUD40UD73B MED40UD73B MDD40UD73B	+15	1.7	2.67	+5	4	6			40	88.5
MAD40UD93B MUD40UD93B MED40UD93B MDD40UD93B	+24	1.05	1.67	+5	4	6			40	86
MAD40UD03B MUD40UD03B MED40UD03B MDD40UD03B	+28	0.72	1.43	+5	4	6			40	85.5
MAD40UT32M3B MUD40UT32M3B MED40UT32M3B MDD40UT32M3B	+5	5	8	+3.3	4	6	-5	0.5	40	89
MAD40UT326B MUD40UT326B MED40UT326B MDD40UT326B	+5	5	8	+3.3	4	6	+12	0.5	40	89
MAD40UT32M6B MUD40UT32M6B MED40UT32M6B MDD40UT32M6B	+5	5	8	+3.3	4	6	-12	0.5	40	89
MAD40UT63M3B MUD40UT63M3B MED40UT63M3B MDD40UT63M3B	+12	2.1	3.34	+5	4	6	-5	0.5	40	88.5
MAD40UT63M6B MUD40UT63M6B MED40UT63M6B MDD40UT63M6B	+12	2.1	3.34	+5	4	6	-12	0.5	40	88
MAD40UT623B MUD40UT623B MED40UT623B MDD40UT623B	+12	2.1	3.34	+3.3	4	6	+5	0.5	40	88.5
MAD40UT62M6B MUD40UT62M6B MED40UT62M6B MDD40UT62M6B	+12	2.1	3.34	+3.3	4	6	-12	0.5	40	88
MAD40UT73M7B MUD40UT73M7B MED40UT73M7B MDD40UT73M7B	+15	1.7	2.67	+5	4	6	-15	0.5	40	88
MAD40UT936B MUD40UT936B MED40UT936B MDD40UT936B	+24	1.05	1.67	+5	4	6	+12	0.5	40	86
MAD40UT93M6B MUD40UT93M6B MED40UT93M6B MDD40UT93M6B	+24	1.05	1.67	+5	4	6	-12	0.5	40	86

INPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating input voltage range	AC input	85		264	VAC
	DC input	120		370	VDC
Input frequency	AC input	47		63	Hz
Input current	100VAC			1.05	A
	240VAC			0.55	
No load input power	230VAC			0.15	Watts
Leakage current	264VAC			75	μA
Start up time				1000	ms
Rise time			20		ms
Hold up time	115VAC and Full Load		25		ms
Input inrush current	230VAC			60	A
Input protection	Internal fuse in line and neutral			T3.15A/250VAC	

OUTPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Output power	Pout1+Pout2+Pout3			40	Watts
Initial set voltage accuracy	230VAC and Full Load	Vout 1	-1.0	+1.0	%
		Vout 2 、 Vout 3	-2.0	+2.0	
Line regulation	Low Line to High Line at Full Load		-0.2	+0.2	%
Load regulation	No Load to Full Load	Vout 1	-0.5	+0.5	%
		Vout 3	-0.7	+0.7	
	No Load to Full Load	Vout 2	-1.5	+1.5	%
		0.1W Load to Full Load	-0.7	+0.7	
Cross regulation	Asymmetrical load 25%/100% FL		-1.5	+1.5	%
Voltage adjustability	Vout 1	-10		+10	%
Minimum load	M□D40UD□□		0		W
	M□D40UT□□□□; Vout 3 is full load	Vout 1 + Vout 2	0.5		
Ripple and noise	Measured by 20MHz bandwidth				mVp-p
	With a 10μF/25V 1206 X7R MLCC	Vout 1	5V	100	
	With a 1μF/50V 1206 X7R MLCC	Vout 1	12V	120	
			15V	150	
			24V	240	
			28V	280	
	With a 10μF/25V 1206 X7R MLCC	Vout 2	All	100	
	With a 10μF/25V 1206 X7R MLCC	Vout 3	5V	100	
			12V	120	
			15V	150	
Temperature coefficient			-0.02	+0.02	%/°C
Transient response	Load step form 50 ~ 75% change at 2.5A/μs	Vout 1	Peak deviation	3	% Vout
				Recovery time	
Over voltage protection	% of Vout(nom); Latch mode	Vout 1	125	140	%
Over power protection	% of nominal output power; Hiccup mode	Pout 1 + Pout 2	145		%
Short circuit protection			Continuous, automatic recovery		

GENERAL SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Isolation voltage	1 minute (2MOPP insulation)	Input to Output Input (Output) to F.G.	4000 2500			VAC
Isolation resistance	500VDC		0.1			GΩ
Switching frequency	230VAC	Vout 1 5V Others Vout 2 Vout 3		70 115 750 510		kHz
Safety approvals			ANSI/AAMI ES60601-1 IEC60601-1 EN60601-1			
Weight		MAD MUD MED MDD	150 (5.29oz) 198 (6.98oz) 216 (7.62oz) 238 (8.40oz)			
MTBF	MIL-HDBK-217F, Full load		1.716 x 10 ⁶ hrs			

ENVIRONMENTAL SPECIFICATIONS

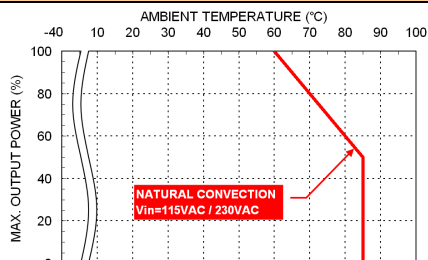
Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	With derating	-40		+85	°C
Storage temperature range		-40		+85	°C
Operating altitude				5000	m
Shock					IEC60068-2-27
Vibration					IEC60068-2-6
Relative humidity	Non-condensing			5% to 95%	RH

EMC SPECIFICATIONS

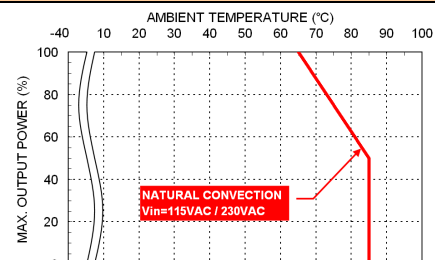
Parameter	Conditions	Level
EMI ⁽¹⁾	EN55011, EN55022 and FCC Part 18	Conducted Class B Radiated Class B
Harmonic currents	EN61000-3-2 Full Load	Class A
Voltage flicker	EN61000-3-3	
ESD	EN61000-4-2 Air ± 15kV and Contact ± 8kV	Perf. Criteria A
Radiated immunity	EN61000-4-3 20 V/m	Perf. Criteria A
Fast transient	EN61000-4-4 ± 2kV	Perf. Criteria A
Surge	EN61000-4-5 DM ± 1kV	Perf. Criteria A
Conducted immunity	EN61000-4-6 20 Vr.m.s	Perf. Criteria A
Power frequency magnetic field	EN61000-4-8 30 A/m	Perf. Criteria A
Dip and interruptions	EN60601-1-2 0% of 240VAC 0.5 cycle EN61000-4-11 0% of 240VAC 1 cycle 70% of 240VAC 25/30 cycle 0% of 240VAC Single phase 0% of 100VAC 0.5 cycle 0% of 100VAC 1 cycle 70% of 100VAC 25/30 cycle 0% of 100VAC Single phase	Perf. Criteria A Perf. Criteria A Perf. Criteria A Perf. Criteria B Perf. Criteria A Perf. Criteria A Perf. Criteria A Perf. Criteria B

Note: 1. External components may be required for class I application. For further information, please contact with POWER MATE.

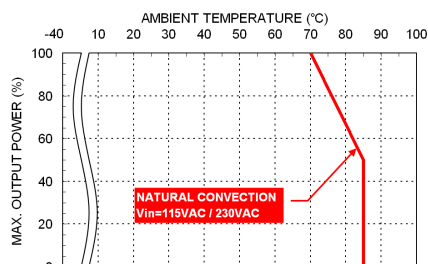
CHARACTERISTIC CURVE



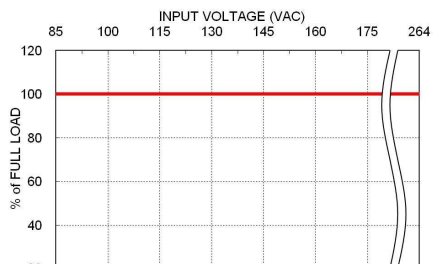
M□D40UDxxB xx=03/93
M□D40UTxxxB xxx=32M3/326/32M6/936/93M6



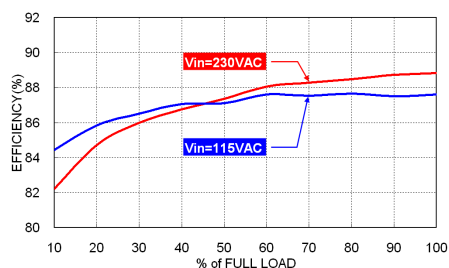
M□D40UDxxB xx=32/62
M□D40UTxxxB xxx=623/62M6



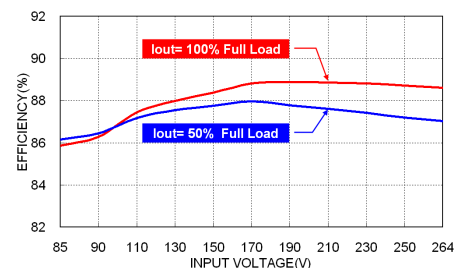
M□D40UDxxB xx=63/73
M□D40UTxxxB xxx=63M3/63M6/73M7



Derating Curve vs. Input Voltage
M□D65



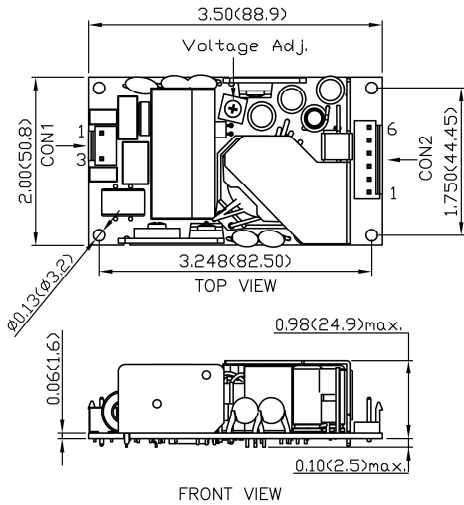
Efficiency VS Output Load
M□D40UT63M6B



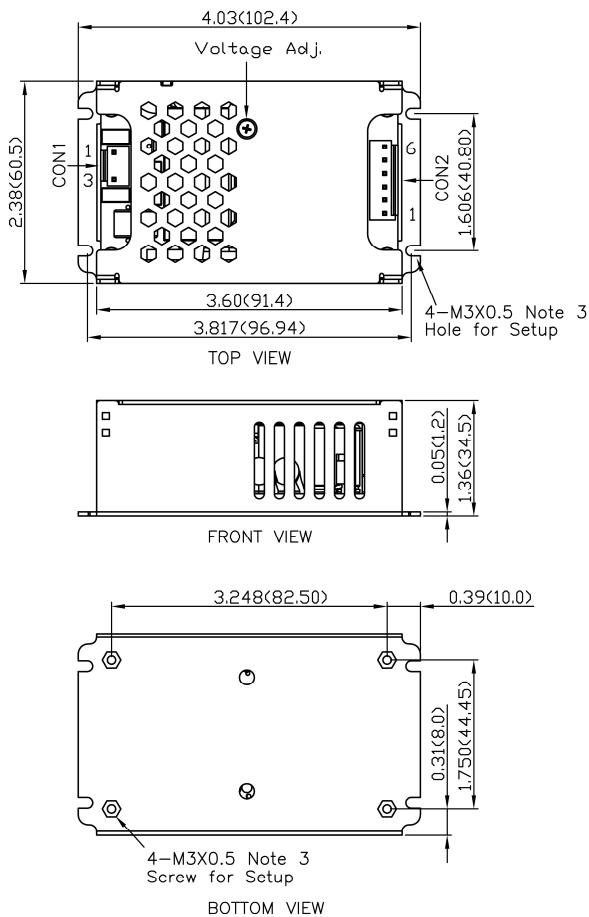
Efficiency VS Input Voltage
M□D40UT63M6B

MECHANICAL DRAWING

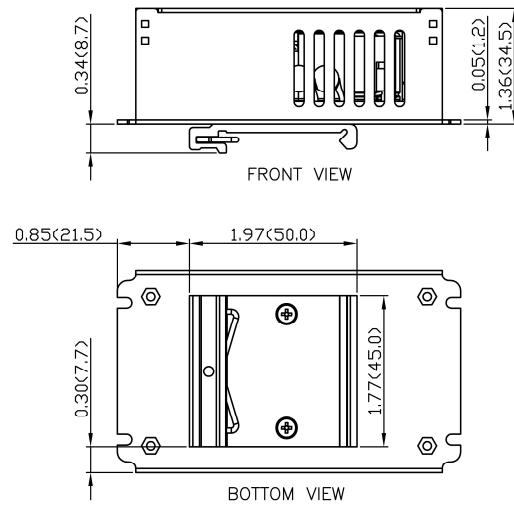
MAD Open type



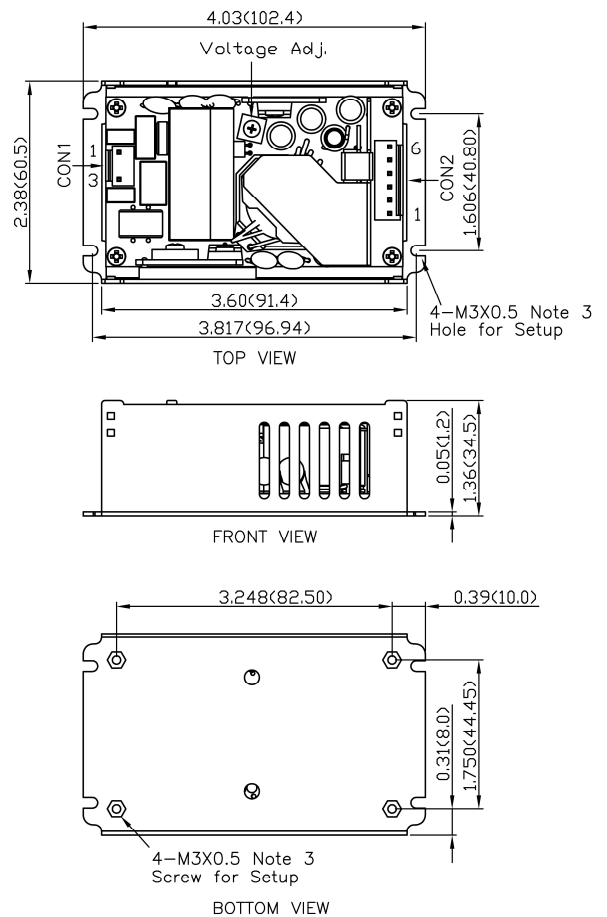
MED Enclosed type



MDD Din rail type



MUD U chassis type



1. All dimensions in inch (mm)
2. Tolerance : $x.xx \pm 0.02$ ($x.x \pm 0.5$) $x.xxx \pm 0.01$ ($x.xx \pm 0.25$)
3. M3×0.5 screw locked torque MAX 5Kgf.cm/0.49N.m

CONNECTORS CONNECTIONS

CON1 – Input Connector

Pin 1	Line
Pin 3	Neutral

Mates with
JST housing : **VHR-3N**
JST crimp terminals : **SVH-21T-P1.1**

Either one of four screws holes of Open / Chassis type can be considered as PE connection for CLASS I application.

CON2 – Output Connector

Pin 1	Vout3
Pin 2,3	Com
Pin 4,5	Vout2
Pin 6	Vout1

Mates with
JST housing : **VHR-6N**
JST crimp terminals : **SVH-21T-P1.1**