



Power Mate Technology, Inc MAD40 Multi Series

2 X 3.5 Inch AC-DC POWER SUPPLIES
Up to 40 Watts

5
YEARS
WARRANTY

ROHS
COMPLIANT

REACH
COMPLIANT

+85°C
-40°C
AMBIENT TEMP.



Medical



Automation



Datacom



IPC



Industry



Measurement



Telecom



Automobile



Boat



Charger



PV



Railway



2 X MOPP	4000 VAC Isolation Voltage	ADJ. Output Voltage	Internal EN55032 Class Filter B	LOW Cross Reg.	LOW Leakage Current	LOW Standby Power	Operating Altitude 5000 meter	Protection Class I Class II	OPP	OVP	SCP
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PART NUMBER STRUCTURE

MAD	40	U	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	C	- xx	yy	- <input type="checkbox"/>
Series Name	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	Connector Options
				Vo1	Vo2	Vo3 (Triple only)					
A: Open type U: U chassis type E: Enclosed type D: Din rail type		U: Universal 85 ~ 264	D: Dual T: Triple	3: 5V 4: 7.5V 5: 9V 6: 12V 7: 15V 8: 18V 9: 24V 0: 28V	1: 2.5V 2: 3.3V 3: 5V x: refer to Suffix xx	M: Minus <input type="checkbox"/> : Positive	1: 2.5V 2: 3.3V 3: 5V 4: 7.5V 5: 9V 6: 12V 7: 15V 8: 18V 9: 24V y: refer to Suffix yy	C: CLASS I D: CLASS II <input type="checkbox"/> : CLASS I (※NRND) B: CLASS II (※NRND)			<input type="checkbox"/> : JST M: Molex T: Terminal Block
								※NRND: Not recommended for new designs			

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

Model Number	Output 1			Output 2			Output 3		Max. Output Power W	Efficiency %	Maximum Capacitor Load µF
	Voltage VDC	Current (Normal) A	Current (MAX) A	Voltage VDC	Current (Normal) A	Current (MAX) A	Voltage VDC	Current (MAX) A			
MAD40UD32C MUD40UD32C MED40UD32C MDD40UD32C	+5	5	8	+3.3	4	6	---	---	40	89.5	12000 / 2000
MAD40UD63C MUD40UD63C MED40UD63C MDD40UD63C	+12	2.1	3.34	+5	4	6	---	---	40	89	1750 / 2000
MAD40UD62C MUD40UD62C MED40UD62C MDD40UD62C	+12	2.1	3.34	+3.3	4	6	---	---	40	90	1750 / 2000
MAD40UD73C MUD40UD73C MED40UD73C MDD40UD73C	+15	1.7	2.67	+5	4	6	---	---	40	88.5	1670 / 2000
MAD40UD93C MUD40UD93C MED40UD93C MDD40UD93C	+24	1.05	1.67	+5	4	6	---	---	40	86	440 / 2000
MAD40UD03C MUD40UD03C MED40UD03C MDD40UD03C	+28	0.72	1.43	+5	4	6	---	---	40	85.5	220 / 2000
MAD40UT32M3C MUD40UT32M3C MED40UT32M3C MDD40UT32M3C	+5	5	8	+3.3	4	6	-5	0.5	40	89	10000 / 2000 / 420
MAD40UT326C MUD40UT326C MED40UT326C MDD40UT326C	+5	5	8	+3.3	4	6	+12	0.5	40	89	10000 / 2000 / 420
MAD40UT32M6C MUD40UT32M6C MED40UT32M6C MDD40UT32M6C	+5	5	8	+3.3	4	6	-12	0.5	40	89	10000 / 2000 / 420
MAD40UT63M3C MUD40UT63M3C MED40UT63M3C MDD40UT63M3C	+12	2.1	3.34	+5	4	6	-5	0.5	40	88.5	1750 / 2000 / 420
MAD40UT63M6C MUD40UT63M6C MED40UT63M6C MDD40UT63M6C	+12	2.1	3.34	+5	4	6	-12	0.5	40	88	1750 / 2000 / 420
MAD40UT623C MUD40UT623C MED40UT623C MDD40UT623C	+12	2.1	3.34	+3.3	4	6	+5	0.5	40	88.5	1750 / 2000 / 420

Model Number	Voltage VDC	Output 1		Voltage VDC	Output 2		Output 3		Max. Output Power W	Efficiency %	Maximum Capacitor Load μ F
		Current (Normal) A	Current (MAX) A		Current (Normal) A	Current (MAX) A	Voltage VDC	Current (MAX) A			
MAD40UT62M6C MUD40UT62M6C MED40UT62M6C MDD40UT62M6C	+12	2.1	3.34	+3.3	4	6	-12	0.5	40	88	1750 / 2000 / 420
MAD40UT73M7C MUD40UT73M7C MED40UT73M7C MDD40UT73M7C	+15	1.7	2.67	+5	4	6	-15	0.5	40	88	1670 / 2000 / 420
MAD40UT936C MUD40UT936C MED40UT936C MDD40UT936C	+24	1.05	1.67	+5	4	6	+12	0.5	40	86	440 / 2000 / 420
MAD40UT93M6C MUD40UT93M6C MED40UT93M6C MDD40UT93M6C	+24	1.05	1.67	+5	4	6	-12	0.5	40	86	440 / 2000 / 420

INPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Input frequency	AC input	47		63	Hz
Input current	100VAC 240VAC			1.05 0.55	A
No load input power	230VAC		0.15		Watts
Leakage current	264VAC		75		μ A
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	

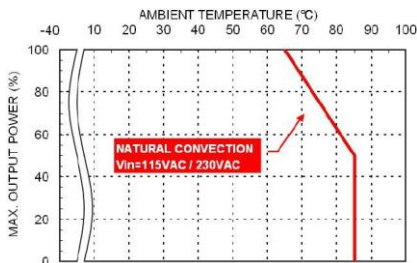
OUTPUT SPECIFICATIONS						
Parameter	Conditions		Min.	Typ.	Max.	Unit
Output power	Pout 1+Pout 2+Pout 3				40	Watts
Initial set voltage accuracy	230VAC and Full Load	Vout 1 Vout 2, Vout 3	-1.0 -2.0		+1.0 +2.0	%
Line regulation	Low Line to High Line at Full Load		-0.2		+0.2	%
Load regulation	No Load to 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	Vout 2	-0.7		
Cross regulation	Asymmetrical load 25%/100% FL		-1.5		+1.5	%
Voltage adjustability		Vout 1	-10		+10	%
Minimum load	M□D40UD□□ M□D40UT□□□□; Vout 3 is full load	Vout 1+Vout 2		0 0.5		W
Ripple and noise	Measured by 20MHz bandwidth					
	With a 10μF/25V 1206 X7R MLCC	Vout 1	5V	100		mVp-p
		Vout 1	12V	120		
	With a 1μF/50V 1206 X7R MLCC		15V	150		
			24V	240		
			28V	280		
		All	100			
With a 10μF/25V 1206 X7R MLCC	Vout 2	5V	100			
	Vout 3	12V	120			
		15V	150			
Temperature coefficient			-0.02		+0.02	%/°C
Transient response	Load step from 50 ~ 75% change at 2.5A/μs	Vout 1	Peak deviation Recovery time		3	% Vout μs
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		70		kHz
			5V Others	115		
		Vout 2 Vout 3		750 510		
Safety approvals	IEC/ EN/ ANSI/AAMI ES 60601-1 IEC/ EN/ UL 62368-1					UL:E360199 UL:E193009 CB:UL(Demko)
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

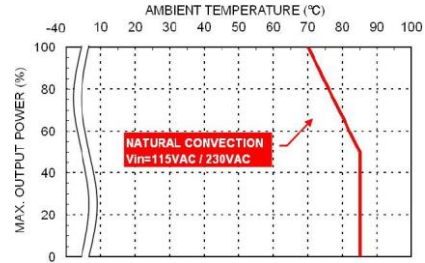
ENVIRONMENTAL SPECIFICATIONS						
Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating ambient temperature		With derating	-40		+85	°C
Storage temperature range			-40		+85	°C
Operating altitude					5000	m
Shock					IEC60068-2-27	
Vibration					IEC60068-2-6	
Relative humidity	Non-condensing					5% to 95%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

EMC SPECIFICATIONS			
Parameter	Conditions		Level
EMI	EN55011, EN55032, EN60601-1-2 and FCC Part 18 / 15		Conducted Class B Radiated Class B
	External components may be required for class I application.		
Harmonic currents	EN61000-3-2	Full Load	Class A
Voltage flicker	EN61000-3-3		
EMS	EN55024 and EN60601-1-2		
ESD	EN61000-4-2		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 and CM ± 2kV	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	EN61000-4-11		

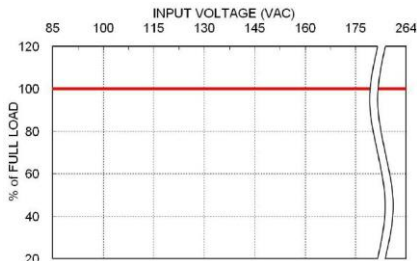
CHARACTERISTIC CURVE



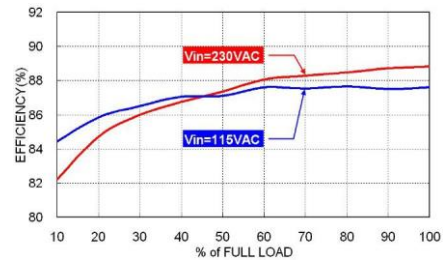
Derating Curve vs. Ambient Temperature
M□D40UD



Derating Curve vs. Ambient Temperature
M□D40UT



Derating Curve vs. Input Voltage
M□D40



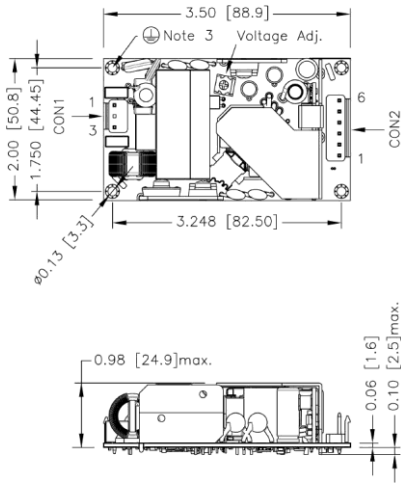
Efficiency vs. Output Load
M□D40UT63M6B



Efficiency vs. Input Voltage
M□D40UT63M6B

MECHANICAL DRAWING

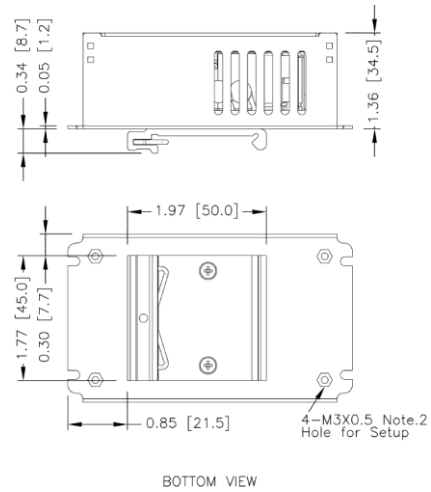
MAD Open type



FRONT VIEW

1. All dimensions in inch[mm]
Tolerance: $x.xx \pm 0.02 [x.x \pm 0.5]$ $x.xxx \pm 0.010 [x.xx \pm 0.25]$
2. The screw locked torque: MAX 5.0kgf-cm/0.49N-m
3. The screws holes can be considered as PE connection for CLASS I application.

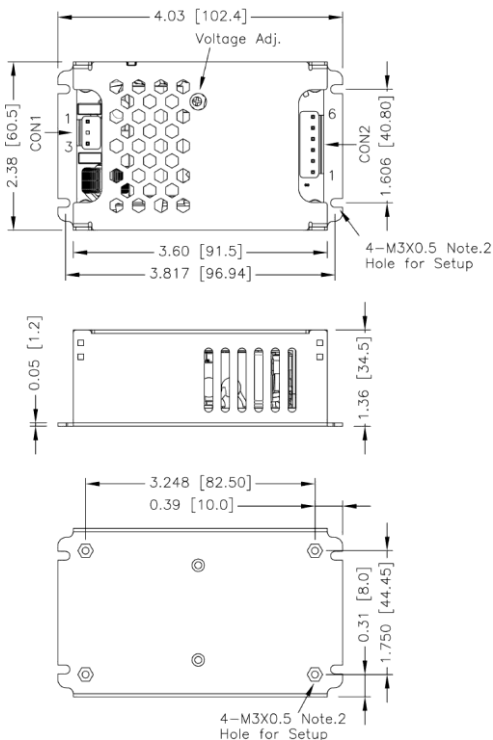
MDD Din rail type



BOTTOM VIEW

1. All dimensions in inch[mm]
Tolerance: $x.xx \pm 0.02 [x.x \pm 0.5]$ $x.xxx \pm 0.010 [x.xx \pm 0.25]$
2. The screw locked torque: MAX 5.0kgf-cm/0.49N-m

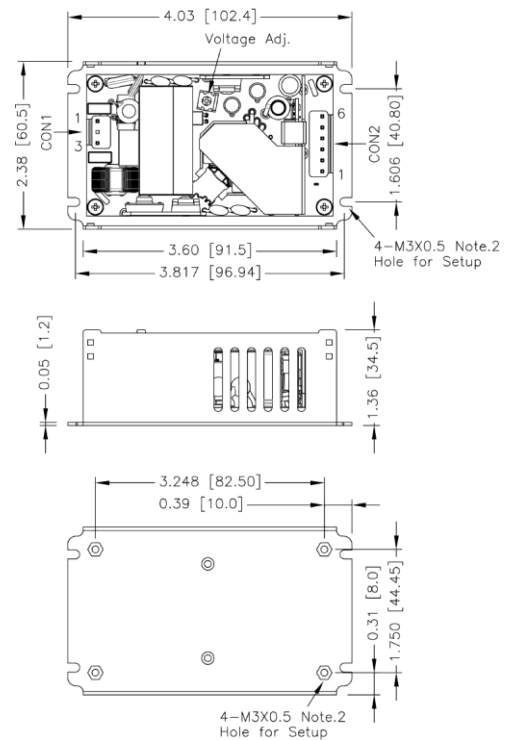
MED Enclosed type



BOTTOM VIEW

1. All dimensions in inch[mm]
Tolerance: $x.xx \pm 0.02 [x.x \pm 0.5]$ $x.xxx \pm 0.010 [x.xx \pm 0.25]$
2. The screw locked torque: MAX 5.0kgf-cm/0.49N-m

MUD U chassis type



BOTTOM VIEW

1. All dimensions in inch[mm]
Tolerance: $x.xx \pm 0.02 [x.x \pm 0.5]$ $x.xxx \pm 0.010 [x.xx \pm 0.25]$
2. The screw locked torque: MAX 5.0kgf-cm/0.49N-m




CONNECTOR CONNECTIONS

CON1 – Input Connector		
Pin Number	AC Input	DC Input
		M□D40UDXXC, M□D40UDXXD M□D40UTXXC, M□D40UTXXD
Pin 1	Line	DC+
Pin 3	Neutral	DC-

CON2 – Output Connector	
Pin 1	Vout3
Pin 2,3	Com
Pin 4,5	Vout2
Pin 6	Vout1

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

CONNECTOR OPTIONS

Blank:	JST Type	-M Molex Type	-T Terminal Block
	Mates with housing CON1: VHR-3N CON2: VHR-6N	 Mates with housing CON1: 09-50-8031 CON2: 09-50-8061	 Screw locked torque MAX 2Kgf.cm/0.2N.m Wire dimension range 26 ~ 16AWG
	Crimp terminals CON1: SVH-21T-P1.1 CON2: SVH-21T-P1.1	Crimp terminals CON1: SD-2478 CON2: SD-2478	