

MXD65 SERIES

MULTI -OUTPUT

2 X 3.5 Inch AC-DC POWER SUPPLIES

UNIVERSAL INPUT RANGE

UP TO 65Watts



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	65	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		
MAD65UD32B MUD65UD32B MED65UD32B MDD65UD32B	+5	6	10	+3.3	6	8			50	88.5
MAD65UD63B MUD65UD63B MED65UD63B MDD65UD63B	+12	3	5.42	+5	6	8			65	90
MAD65UD62B MUD65UD62B MED65UD62B MDD65UD62B	+12	3	5.42	+3.3	6	8			65	89.5
MAD65UD73B MUD65UD73B MED65UD73B MDD65UD73B	+15	2.4	4.34	+5	6	8			65	90.5
MAD65UD93B MUD65UD93B MED65UD93B MDD65UD93B	+24	1.5	2.71	+5	6	8			65	89
MAD65UD03B MUD65UD03B MED65UD03B MDD65UD03B	+28	1.25	2.33	+5	6	8			65	88
MAD65UT32M3B MUD65UT32M3B MED65UT32M3B MDD65UT32M3B	+5	6	10	+3.3	6	8	-5	0.6	50	88
MAD65UT326B MUD65UT326B MED65UT326B MDD65UT326B	+5	6	10	+3.3	6	8	+12	0.6	50	88
MAD65UT32M6B MUD65UT32M6B MED65UT32M6B MDD65UT32M6B	+5	6	10	+3.3	6	8	-12	0.6	50	88
MAD65UT63M3B MUD65UT63M3B MED65UT63M3B MDD65UT63M3B	+12	3	5.42	+5	6	8	-5	0.6	65	89.5
MAD65UT63M6B MUD65UT63M6B MED65UT63M6B MDD65UT63M6B	+12	3	5.42	+5	6	8	-12	0.6	65	89
MAD65UT623B MUD65UT623B MED65UT623B MDD65UT623B	+12	3	5.42	+3.3	6	8	+5	0.6	65	89
MAD65UT62M6B MUD65UT62M6B MED65UT62M6B MDD65UT62M6B	+12	3	5.42	+3.3	6	8	-12	0.6	65	88.5
MAD65UT73M7B MUD65UT73M7B MED65UT73M7B MDD65UT73M7B	+15	2.4	4.34	+5	6	8	-15	0.6	65	89.5
MAD65UT936B MUD65UT936B MED65UT936B MDD65UT936B	+24	1.5	2.71	+5	6	8	+12	0.6	65	88.5
MAD65UT93M6B MUD65UT93M6B MED65UT93M6B MDD65UT93M6B	+24	1.5	2.71	+5	6	8	-12	0.6	65	88.5

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			1.65	A
	240VAC			0.95	
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		16		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 Vout 1 5V Others			50 65	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 Vout 3	-0.5 -0.7		+0.5 +0.7	%
	No Load to Full Load Vout 2	-1.5 -0.7		+1.5 +0.7	
	0.1W Load to Full Load				
Cross regulation	Asymmetrical load 25%/100% FL	-1.5		+1.5	%
Voltage adjustability	Vout 1	-10		+10	%
Minimum load	M□D65UD□□ M□D65UT□□□□; Vout 3 is full load Vout 1 + Vout 2		0 0.5		W
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 15V 24V 28V		120 150 240 280		
	With a 10μF/25V 1206 X7R MLCC Vout 2 All		100		
	With a 10μF/25V 1206 X7R MLCC Vout 3 5V 12V 15V		100 120 150		
Temperature coefficient		-0.02		+0.02	%/°C
Transient response	Load step form 50 ~ 75% change at 2.5A/μs Vout 1 Peak deviation Recovery time			3 600	% 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 5V Others Vout 2 Vout 3		60 115 750 510		kHz
Safety approvals				ANSI/AAMI ES60601-1 IEC60601-1 EN60601-1	
Weight	MAD MUD MED MDD			155g (5.47oz) 203g (7.16oz) 221g (7.80oz) 243g (8.57oz)	
MTBF	MIL-HDBK-217F, Full load			1.059 x 10 ⁶	hrs

ENVIRONMENTAL SPECIFICATIONS

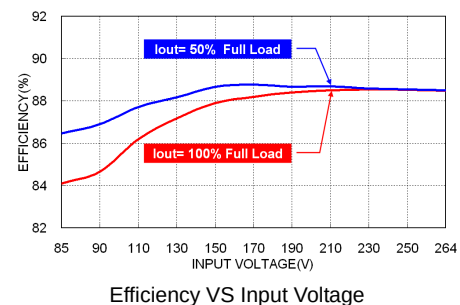
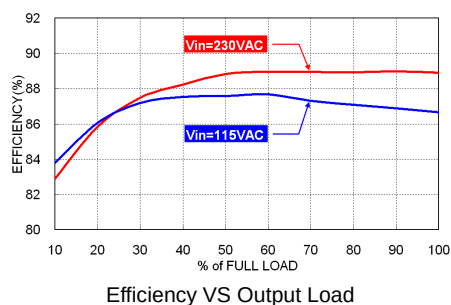
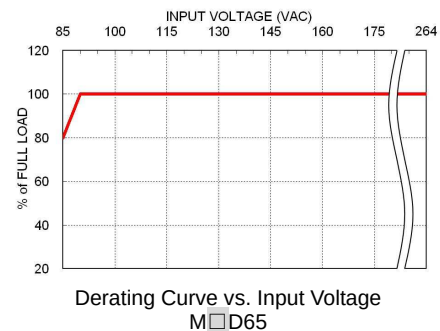
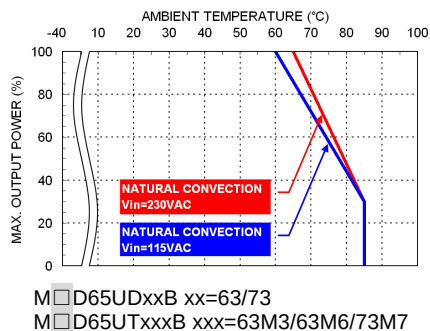
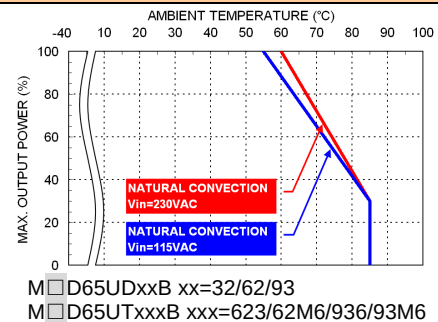
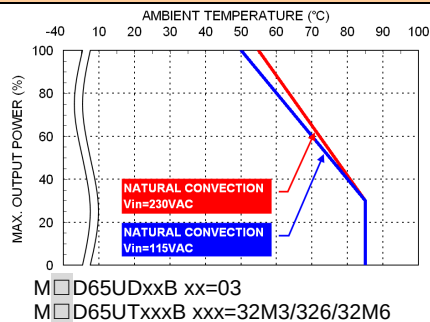
Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	Natural convection	-40		+85	°C
Storage temperature range		-40		+85	°C
Operating altitude				5000	m
Shock					IEC60068-2-27
Vibration					IEC60068-2-6
Relative humidity	Non-condensing			5% to 95%	RH

EMC SPECIFICATIONS

Parameter	Conditions	Level
EMI ⁽¹⁾	EN55011, EN55022 and FCC Part 18	Conducted Radiated
Harmonic currents	EN61000-3-2 Full Load	Class B
Voltage flicker	EN61000-3-3	Class B
ESD	EN61000-4-2 Air ± 15kV and Contact ± 8kV	Class 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	Perf. Criteria A Perf. Criteria A Perf. Criteria A Perf. Criteria B
	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

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

CHARACTERISTIC CURVE

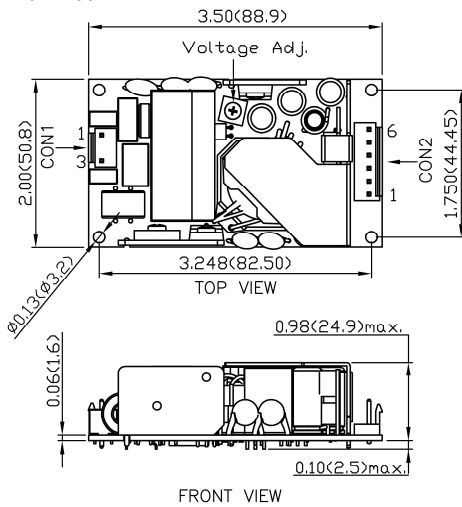


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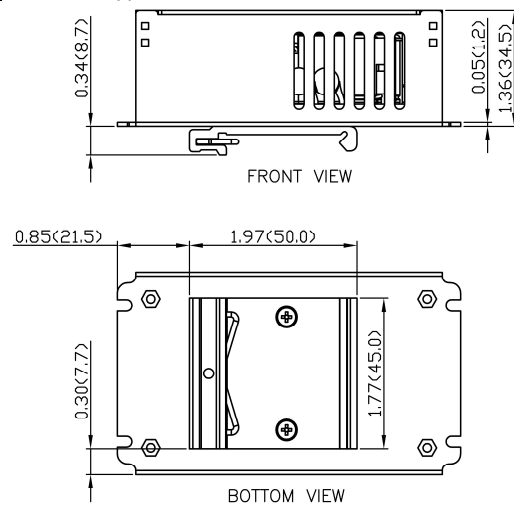
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MECHANICAL DRAWING

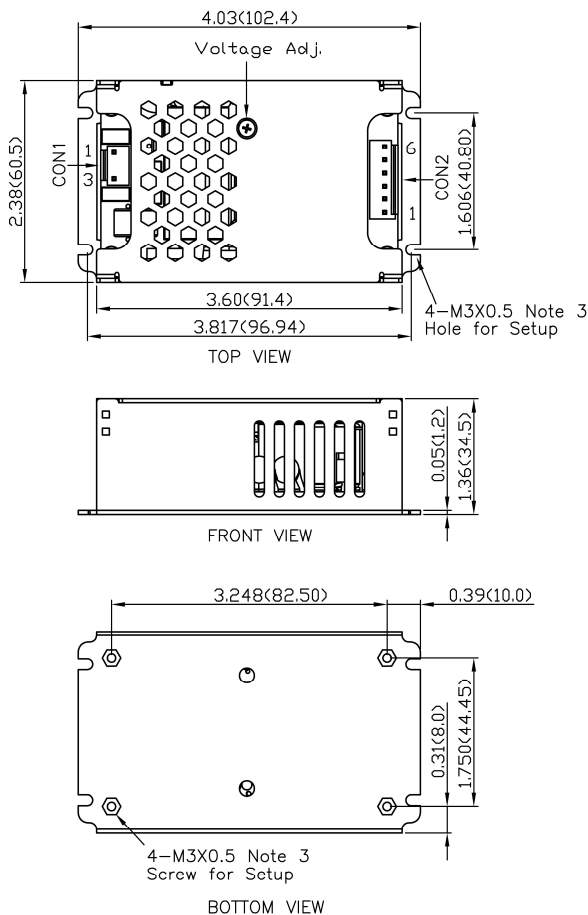
MAD Open type



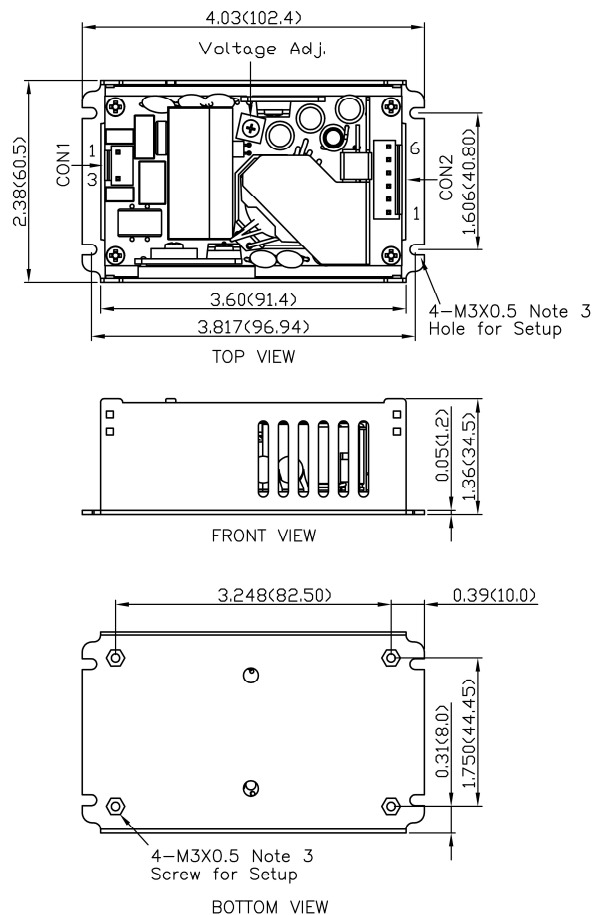
MDD Din rail type



MED Enclosed type



MUD U chassis type



1. All dimensions in inch (mm)
2. Tolerance : x.xx±0.02 (x.x±0.5) x.xxx±0.01 (x.xx±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

CON2 – Output Connector

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

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.

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