



P-DUKE POWER

MAD100 Series

2 X 3 Inch AC-DC POWER SUPPLIES
Up to 100 Watts

5
YEARS
WARRANTY

ROHS
COMPLIANT

REACH
COMPLIANT



Medical



Automation



Datacom



IPC



Industry



Measurement



Telecom



Automobile



Boat



Charger



PV



Railway

UL US

CB

CE

UK
CA



2
x
MOPP

4000
VAC
Reinforced
Insulation

ADJ.
Output
Voltage

Internal
EN55032
Class
Filter **B**

LOW
Leakage
Current

LOW
Standby
Power

Protection
Class I
Class II

Operating
Altitude
5000
meter

OCP

OVP

SCP

PART NUMBER STRUCTURE

M	A	D	100	U	S	12	B	-	□
Application	Package Code	Dimension Code	Output Power (W)	Input Voltage (VAC)	Output Quantity	Output Voltage (VDC)	Protection Type		Connector Options
Medical Application	A: Open type U: U chassis type E: Enclosed type D: Din rail type			U: Universal 85 ~ 264VAC	S: Single	12: 12V 15: 15V 18: 18V 24: 24V 28: 28V 36: 36V 48: 48V	B: CLASS II □: CLASS I		□: JST M: Molex T: Terminal Block

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

Model Number	Input Range	Output Voltage	Output Current Natural Convection	Input Power No Load	Efficiency	Maximum Capacitor Load
	VAC	VDC	A	W	%	μF
MAD100US12B	85 ~ 264	12	8.34	0.3	91	6950
MUD100US12B						
MED100US12B						
MDD100US12B						
MAD100US15B	85 ~ 264	15	6.67	0.3	92	4450
MUD100US15B						
MED100US15B						
MDD100US15B						
MAD100US18B	85 ~ 264	18	5.56	0.3	92	3100
MUD100US18B						
MED100US18B						
MDD100US18B						
MAD100US24B	85 ~ 264	24	4.17	0.3	92	1750
MUD100US24B						
MED100US24B						
MDD100US24B						
MAD100US28B	85 ~ 264	28	3.58	0.3	92	1280
MUD100US28B						
MED100US28B						
MDD100US28B						
MAD100US36B	85 ~ 264	36	2.78	0.3	91	770
MUD100US36B						
MED100US36B						
MDD100US36B						
MAD100US48B	85 ~ 264	48	2.09	0.3	91	430
MUD100US48B						
MED100US48B						
MDD100US48B						

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	115VAC and Full Load			1.15	A	
	230VAC and Full Load			0.55		
No load input power	230VAC			0.3	Watts	
Leakage current	264VAC			75	μA	
Power Factor		0.95				
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				100	Watts
Initial set voltage accuracy	230VAC and Full Load	-1.0		+1.0	%
Line regulation	Low Line to High Line at Full Load	-0.2		+0.2	%
Load regulation	No Load to Full Load	-0.5		+0.5	%
	10% Load to 90% Load	-0.4		+0.4	%
Voltage adjustability		-10		+10	%
Minimum load			0		%
Ripple and noise	Measured by 20MHz bandwidth With a 10 μ F/25V 1206 X7R MLCC		120		mVp-p
	12Vout		150		
	15Vout		160		
	18Vout		160		
	With a 1 μ F/50V 1206 X7R MLCC		180		
	24Vout		190		
	28Vout		340		
	36Vout				
	With a 0.1 μ F/100V 1206 X7R MLCC				
	48Vout				
Temperature coefficient		-0.02		+0.02	%/°C
Transient response	Load step from 50 ~ 75% change at 2.5A/ μ s			3	% Vout
	Peak deviation		500		μ s
	Recovery time				
Over voltage protection	% of Vout(nom); Latch mode	115		135	%
Over load protection	% of Iout rated; Hiccup mode	115		150	%
Short circuit protection		Continuous, automatic recovery			

GENERAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Isolation voltage	1 minute (2MOPP insulation)	4000			VAC
	Input to Output	1500			
	Input (Output) to F.G.				
Isolation resistance	500VDC	0.1			G Ω
Switching frequency			60		kHz
	Others		80		
	18Vout				
Safety approvals	IEC/ EN/ ANSI/AAMI ES 60601-1 IEC/ EN/ UL 62368-1			UL:E360199 UL:E193009 CB:UL(Demko)	
Weight				156g (5.50oz) 194g (6.84oz) 210g (7.41oz) 232g (8.18oz)	
				MAD MUD MED MDD	
MTBF	MIL-HDBK-217F Ta=25°C, Full load			7.903 x 10 ⁵ hrs	

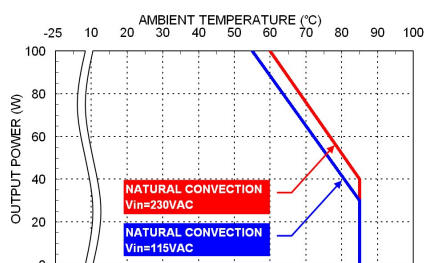
ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	Natural convection	-25		+85	°C
Storage temperature range	With derating	-40		+85	°C
Operating altitude				5000	m
Shock				IEC60068-2-27	
Vibration				IEC60068-2-6	
Relative humidity	Non-condensing			5% to 95% RH	

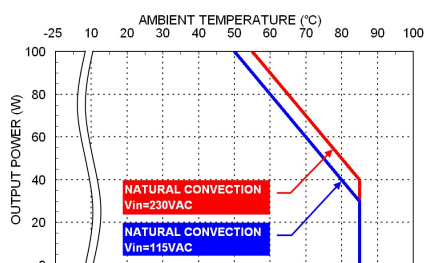
EMC SPECIFICATIONS

Parameter	Conditions	Level
EMI	EN55011, EN55032, EN60601-1-2 and FCC Part 18 / 15 External components may be required for class I application.	Conducted ClassB Radiated ClassA
Harmonic currents	EN61000-3-2 Full Load	Class A and D
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 ± 2 kV	Perf. Criteria A
Surge	EN61000-4-5 DM ± 1 kV and CM ± 2 kV	Perf. Criteria A
Conducted immunity	EN61000-4-6 20 Vr.m.s	Perf. Criteria A
Power frequency magnetic field	EN61000-4-8 30A/m	Perf. Criteria A
Dip and interruptions	EN61000-4-11	

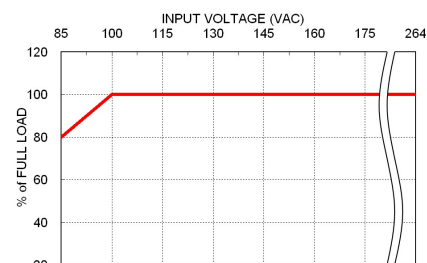
CHARACTERISTIC CURVE



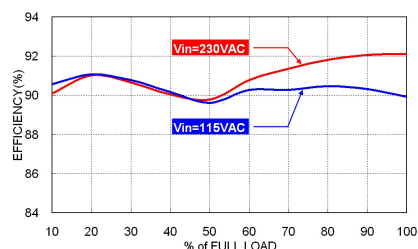
Derating Curve vs. Ambient Temperature
MED100 & MDD100



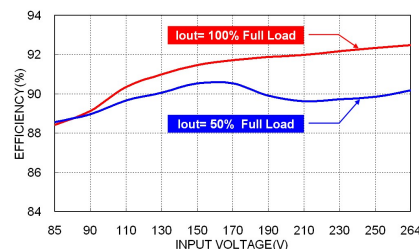
Derating Curve vs. Ambient Temperature
MAD100 & MUD100



Derating Curve vs. Input Voltage
MD100



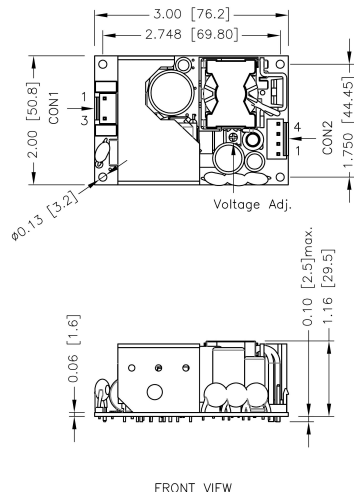
Efficiency vs. Output Load
MD100US24B



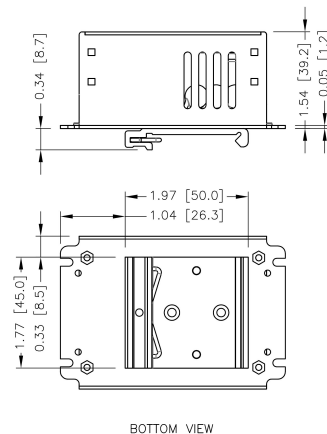
Efficiency vs. Input Voltage
MD100US24B

MECHANICAL DRAWING

MAD Open type



MDD Din rail 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

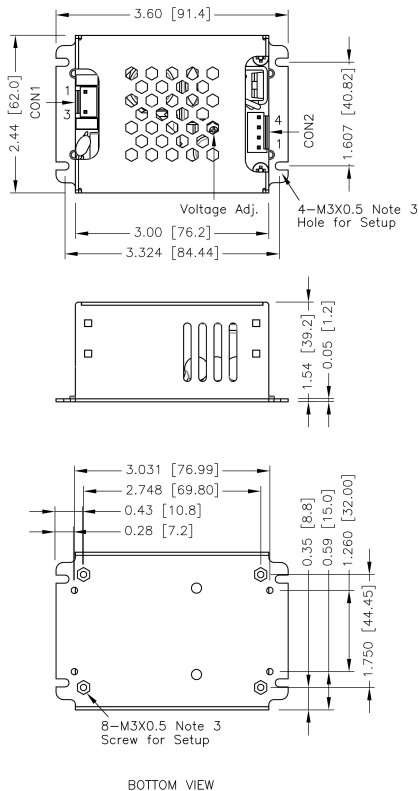
CON2 – Output Connector

Pin 1,2	-Vout
Pin 3,4	+Vout

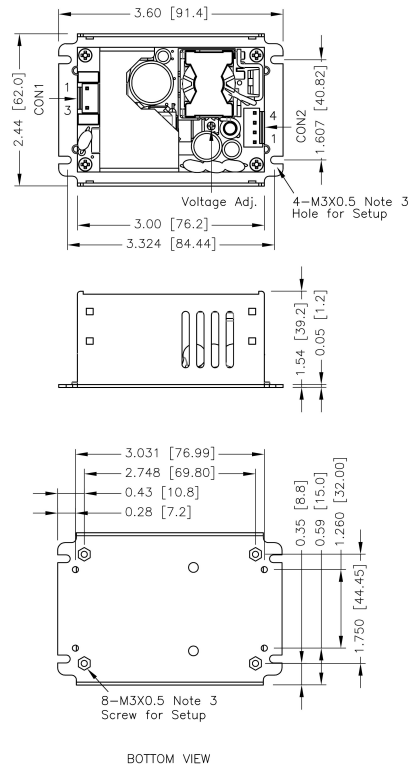
*Either one of four screws holes of Open / Chassis type can be considered as PE connection for CLASS I application.

MECHANICAL DRAWING(CONTINUED)

MED Open type



MUD Din rail 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 1,2	-Vout
Pin 3,4	+Vout

*Either one of four screws holes of Open / 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-4N		Mates with housing CON1: 09-50-8031 CON2: 09-50-8041		Screw locked torque MAX 2Kgf.cm/0.2N.m
	Crimp terminals CON1: SVH-21T-P1.1 CON2: SVH-21T-P1.1		Crimp terminals CON1: SD-2478 CON2: SD-2478		Wire dimension range 26 ~ 16AWG