

## FEATURES

- ITE (2nd) and Medical (3rd ed. MOOP, Risk management) safety approved
- 65W compact high density
- 2" x 4" standard footprint
- High efficiency up to 90%
- Remote Sense
- Universal AC input
- Low profile - 1U package
- Convection-cooled operation up to 65W
- Complies with 5000m altitude
- RoHS compliant
- Input power < 74W
- Input power < 0.3W @ no load
- Complies with ErP/Energy Star requirement (average efficiency > 87%)

## DESCRIPTION

The MVAD065 series switching power supplies utilize advanced component and circuit technologies to deliver high efficiency. Designed for Medical, Telecom, and Industrial applications to satisfy 1U height design considerations, the MVAD065 Series measures only 2.0" x 4.0" x 1.3". All models offer universal AC input and compliance to worldwide safety and EMC standards.



Available now at  
[www.murata-ps.com/en/3d/acdc.html](http://www.murata-ps.com/en/3d/acdc.html)



(pending)



(pending)



(pending)

# MVAD065 Series

**PRELIMINARY** 65W High Density AC/DC Power Supply

## ORDERING GUIDE

Model Number	Natural Convection Cooling	Main Output (V1)
MVAD065-12	60W	12V
MVAD065-24	65W	24V
MVAD065-48		48V

## INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Operating Range	Single phase	90	120/230	264	Vac
	DC	120		300	Vdc
Input Frequency		47	50/60	63	Hz
Turn-on Input Voltage	Input rising at full load	70		85	Vac
Turn-off Input Voltage	Input falling at full load	70		85	
Input Current	90Vac input, full load			1.4	A
Inrush Current	At 264Vac, at 25°C cold start		60		Apk

## OUTPUT CHARACTERISTICS

Model Number	Main Output Voltage (V1)	Load Current	Load Capacitance	Line, Load, Cross Regulation	Typical Efficiency @230Vac full load
MVAD065-12	12V	0 to 5.0A	0 to 1000µF	± 2%	88%
MVAD065-24	24V	0 to 2.71A	0 to 560µF	± 2%	89%
MVAD065-48	48V	0 to 1.36A	0 to 330µF	± 2%	90%

## Main Output Characteristics (all models)

Parameter	Conditions	Min.	Max.	Units
Transient Response	50% load step, 1A/µsec slew rate		± 5	%
Settling Time to 1% of Nominal			200	µsec
Turn On Delay	After application of input power		1	sec
Output Voltage Rise	Monotonic, 0 to 100% load		50	msec
Setpoint Accuracy	120Vac, 40W, 25°C		± 0.5	%
Output Holdup	115Vac, 100% load	10		msec
Temperature Coefficient			0.02	%/°C
Ripple Voltage & Noise <sup>1</sup>			1	%
Remote Sense <sup>3</sup>	Compensates for up to 0.4V of lead drop with remote sense connected. Protected against short circuit and reverse connection.			

1. Ripple and noise are measured with 0.1 µF of ceramic capacitance and 47 µF of electrolytic capacitance on each of the power supply outputs. A short coaxial cable with 50ohm scope termination is used.
2. Unless otherwise specified all readings are taken at 120Vac input and 25 °C ambient temperature.
3. 0.4V lead drop is compensated in remote sense.

## ENVIRONMENTAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Storage Temperature Range		-40		85	°C
Operating Temperature Range	Full load	-10		50	
	50% load	-10		70	
	Start up	-20			
Operating Humidity	Non-condensing	10		95	%
Operating Altitude	Without derating	-200		5000	m
MTBF	Telcordia SR-332 M1C3 25°C	1M			Hours
Shock	Operating, IEC60068-2-27, half-sine 5G, 6ms, 3 times per face, 6 faces	Complies			
	Non-operating, IEC60068-2-27, half-sine, 30G, 18ms, 3 times per face, 6 faces	Complies			
Vibration	Operating, IEC60068-2-6, 1.0G, 10-150Hz, 10 minutes per axis, on all 3 axes	Complies			
	Non-operating, IEC60068-2-6, 2.0G, 10-150Hz, 10 minutes per axis, on all 3 axes	Complies			
Safety (pending)	IEC60950-1:2006/A11:2009 UL60950-1 2nd Ed. 2007-03-27, CSA22.2 N0.60950-1 2nd Ed. 2007.03, EN60950-1:2006+A11:2009 IEC60601-1 Ed. 3 MOOP ANSI/AAMI ES60601-1 (2005+C1:09+A2:10), CSA 22.2 No. 60601-1 (2008) 3rd Edition MOOP EN60601-1:2006 3rd ed. MOOP (Evaluated) CE Marking per LVD				
Warranty	2 years				
Outside Dimensions	2.0" x 4.0" x 1.3" (50.8mm x 101.6mm x 33.02mm)				
Weight	0.27lbs (123g) typical				

## PROTECTION CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Overvoltage Protection	Latching (60% load)	110		160	%V1
Overcurrent Protection	Hiccup mode	110		160	%Amax

## ISOLATION CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation	Primary to Chassis	1500 (1MOOP)			Vac
	Primary to Secondary	3000 (2MOOP)			
	Secondary to Chassis	500			Vdc
Leakage Current	264Vac, 60Hz, 25°C			250	μA
Touch Current	264Vac, 60Hz, 25°C			100	μA

## EMISSIONS AND IMMUNITY

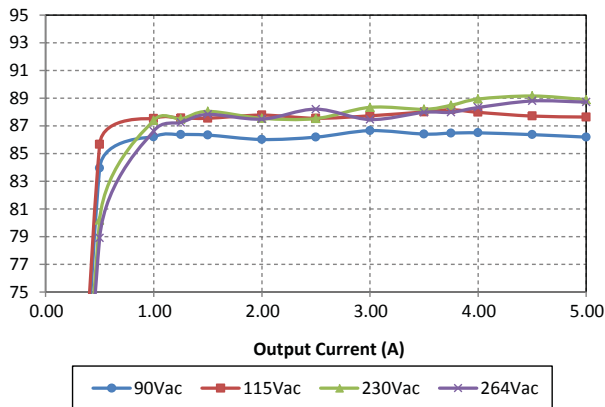
Characteristic	Standard	Compliance
Input Current Harmonics	IEC/EN 61000-3-2	Class A
Voltage Fluctuation and Flicker	IEC/EN 61000-3-3	Complies
Conducted Emissions	EN 55022	Class B
	FCC Part 15	Class B
ESD Immunity	IEC/EN 61000-4-2	Level 4, Criterion A
Radiated Field Immunity	IEC/EN 61000-4-3	Level 2, Criterion A
Electrical Fast Transient Immunity	IEC/EN 61000-4-4	Level 3, Criterion A
Surge Immunity	IEC/EN 61000-4-5	Level 4, Criterion A
RF Conducted Immunity	IEC/EN 61000-4-6	Level 2, Criterion A
Magnetic Field Immunity	IEC/EN 61000-4-8	Level 2, Criterion A
Voltage dips, interruptions	IEC/EN 61000-4-11	Level 3, Criterion B

## EMI CONSIDERATIONS

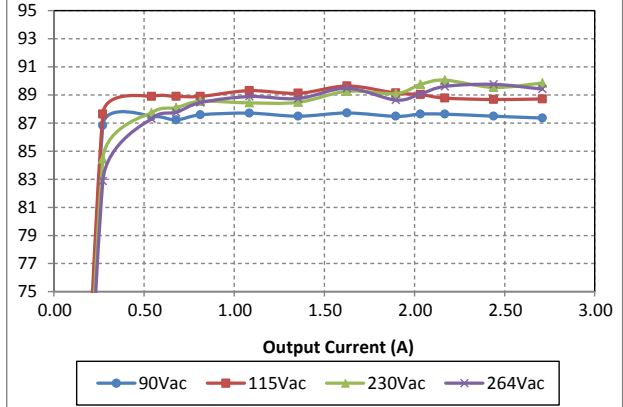
For optimum EMI performance, the power supply should be mounted to a metal plate grounded to all 4 mounting holes of the power supply. To comply with safety standards, this plate must be properly grounded to protective earth (see mechanical dimension notes). Pre-compliance testing has shown the stand-alone power supply to comply with EN55022 class A radiated emissions. Radiated emission results vary with system enclosure and cable routing paths.

## PERFORMANCE DATA

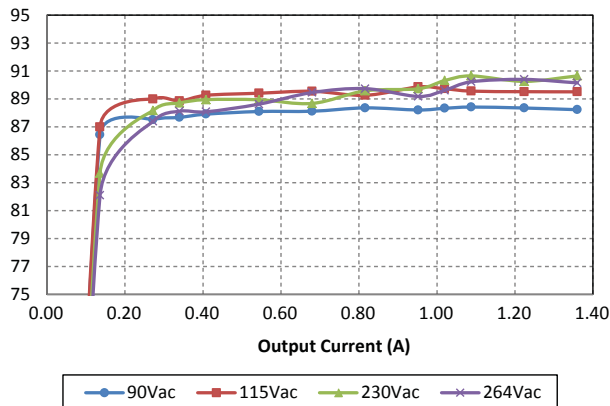
**MVAD065-12 Efficiency (%)**



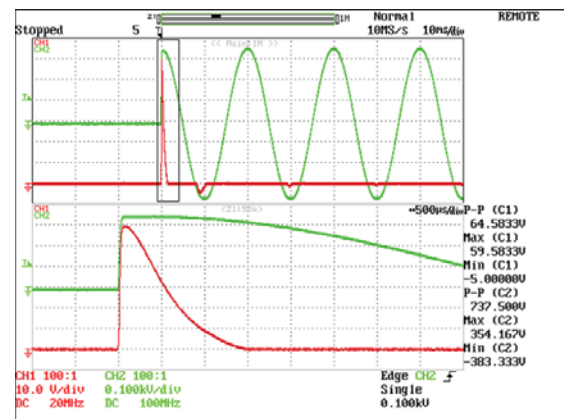
**MVAD065-24 Efficiency (%)**



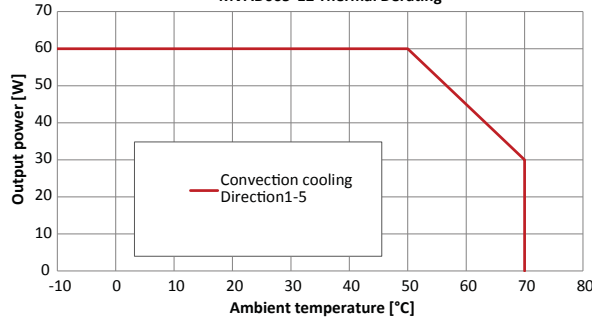
**MVAD065-48 Efficiency (%)**



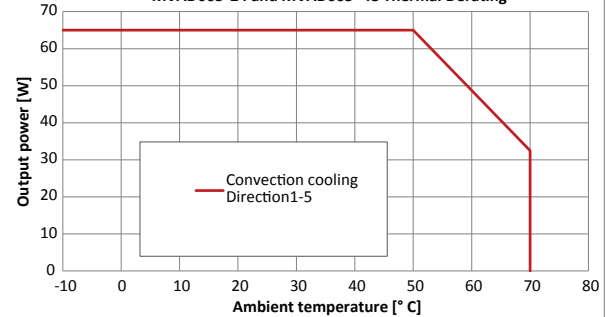
**Inrush waveform**



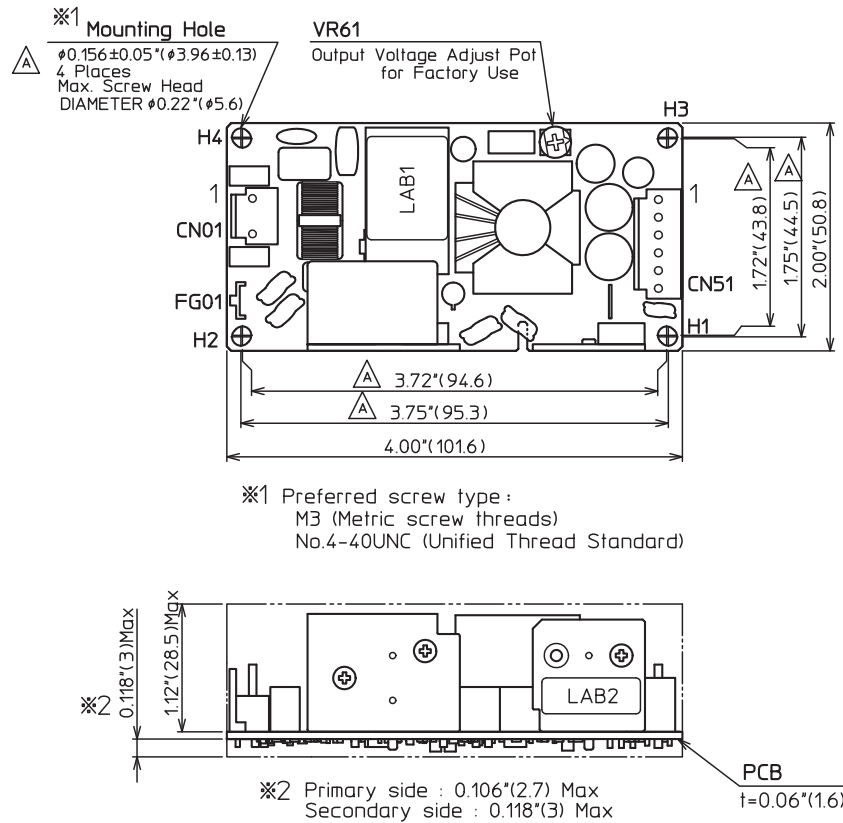
**MVAD065-12 Thermal Derating**



**MVAD065-24 and MVAD065-48 Thermal Derating**



**MECHANICAL DIMENSIONS – MVAD065-12 ONLY**



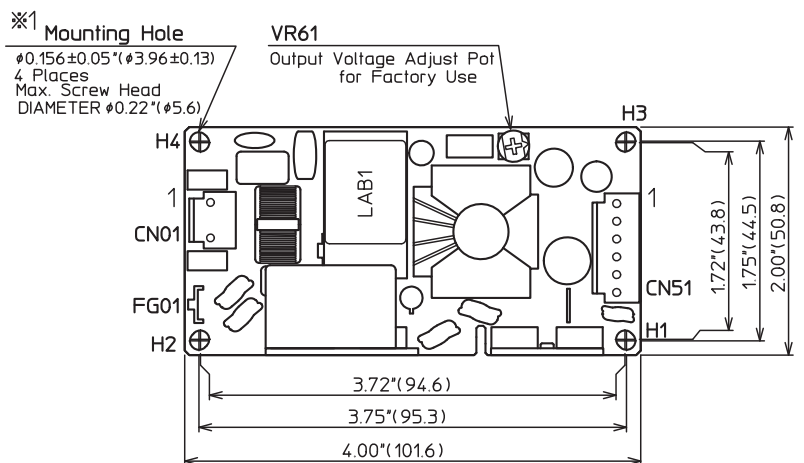
- All dimensions in inches (mm), tolerance is  $\pm 0.02$  (0.5mm)
- Mounting holes H1 and H4 should be grounded for EMI purpose
- Mounting hole H1 is safely ground connection
- This power supply requires mounting on standoffs minimum 0.20" (5.0mm) in height

Dimensions: 2.0" x 4.0" x 1.3" (50.8mm x 101.6mm x 33.02mm)

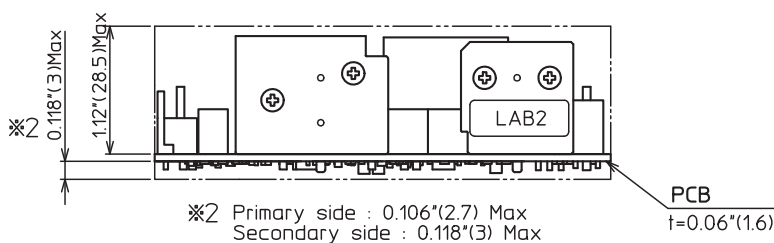
**INPUT/OUTPUT CONNECTOR AND SIGNAL SPECIFICATION AND MATING CONNECTORS**

PIN	Description	Mating Housing	Crimp terminal/pins
Input Connector CN1 : Molex 26-62-4030		Molex 09-50-8031 with locking ramp	Molex 6838 Series
1	AC Line (V-)		
3	AC Neutral (V+)		
Spade Connector: #250			
GND	Earth Ground		
Output Connector CN2 : Molex 26-60-4060			
1, 2	V1	Molex 09-50-8061 with locking ramp	Molex 6838 Series
3, 4	DC Return		
5	-Remote Sense (NC)		
6	+Remote Sense		

**MECHANICAL DIMENSIONS – MVAD065-xx 24V and 48V MODELS**



※1 Preferred screw type :  
 M3 (Metric screw threads)  
 No.4-40UNC (Unified Thread Standard)



- All dimensions in inches (mm), tolerance is  $\pm 0.02^{\circ} (0.5)$
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6	+Remote Sense		

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 ISO 9001 and 14001 REGISTERED



This product is subject to the following **operating requirements** and the **Life and Safety Critical Application Sales Policy**:  
 Refer to: <http://www.murata-ps.com/requirements/>

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