

MI-IAM™

Military Input Attenuator Modules

Features

- Inputs: 28Vdc and 270Vdc
- MIL-STD-461C/D EMI compliance
- MIL-STD-810 environments
- MIL-STD-704A & MIL-STD1275A transients and spikes
- Reverse polarity protection
- Output power: Up to 200W from any combination of MI-200 or MI-J00 modules
- Expansion port for additional power
- Short circuit protected
- Size: 2.28" x 2.4" x 0.5" (57,9 x 61,0 x 12,7mm)

Product Highlights

The MI-IAM is an accessory product to Vicor's MI-Series of DC-DC converters that provides the EMI/RFI filtering and transient protection required in military applications. Designed for use with all 28V and 270V input MI-200 or MI-J00 converters, the MI-IAM can drive any number of modules with output loads to 200W.

The MI-IAM meets the conducted emissions specifications of MIL-STD-461C/D and offers complete input transient, surge, and spike protection to the most severe levels of MIL-STD-1275A and 704A. Reverse polarity protection and overvoltage lockout provide additional safeguards against potentially damaging line conditions. High power arrays can be configured using the expansion port capability of the MI-IAM.

Specifications

(At T_{BP} = 25°C, nominal line and 75% load, unless otherwise specified)

PARAMETER		MIN	TYP	MAX	UNITS	NOTES
Input Characteristics						
28Vdc modules	Steady state input	18.8	28	50	Vdc	
	Input spike limit	-600		600	Vdc	10µS, 50Ω per MIL-STD-704A
		-250		250	Vdc	100µS, 15mJ per MIL-STD-1275A
	Input surge limit			100	Vdc	60mS, 0.5Ω per MIL-STD-1275A
	Overvoltage shutdown	50			Vdc	100mS, automatic recovery
	Reverse polarity protection					Shunt diode: input fuse required
	Recommended fuse			20	Amps	F03A type
270Vdc modules	Steady state input	125	270	400	Vdc	
	Input spike limit			800	Vdc	10µS, 50Ω
		-600		600	Vdc	100µS, 15mJ
	Input surge limit			500	Vdc	100mS, 0.5Ω
	Overvoltage shutdown	400			Vdc	100mS, automatic recovery
	Reverse polarity protection					Shunt diode: input fuse required
	Recommended fuse			4	Amps	F03A type
All models	No load power dissipation		0.5	1.5	Watts	
	Inrush current		110	125	% I_{in}	Steady state, I_{in} 10mS
EMC Characteristics; MIL-STD-461C/D						
Input power leads	Conducted emissions	CE01, CE03, CE07				MIL-STD-461C
		CE101, CE102				MIL-STD-461D
	Conducted susceptibility	CS01, CS02, CS06				MIL-STD-461C
		CS101, CS114, CS116				MIL-STD-461D
Output Characteristics						
Clamp voltage	28Vdc input			60	Vdc	
	270Vdc input			420	Vdc	
Output power				250	Watts	
Overload protection	28Vdc input			20	Amps	Foldback threshold; auto recovery with latched shutdown after 10mS
	270Vdc input			4	Amps	
Isolation Characteristics						
Input to base		1,500			V_{rms}	1 min.
Output to base		1,500			V_{rms}	1 min.
Environmental (MIL-STD-810)						
Altitude - method 500.2		70,000			feet	Procedure II
Humidity - method 507.2		86/240			%/hours	Procedure 1, cycle 1
Acceleration - method 513.3		9			g's	Procedure
Vibration - method 514.3		20			g's	Procedure 1, category 6
Shock - method 516.3		40			g's	Procedure 1
Reliability (MIL-HDBK-217F)						
25°C Ground Benign: G.B.			3,352,133		hours	
50°C Naval Sheltered: N.S.			804,512		hours	
65°C Airborne Inhabited Cargo: A.I.C.			653,666		hours	
Thermal Characteristics						
Efficiency			97		%	
Baseplate to sink			0.14		°C/Watt	
Operating temperature, baseplate				100	°C	See product grade specifications
Storage temperature				125	°C	See product grade specifications
Mechanical Specifications						
Weight			3 (85)		ounces (grams)	

MI-IAM Model Selection Chart

Model Number	Nominal Input Voltage	Input Range	Compatible MI-Series	Converter
MI-A22-MU	28Vdc	18.8–50Vdc	MI-22x and MI-J2x-Mx	M-grade
MI-A66-MU	270Vdc	125–400Vdc	MI-26x and MI-J6x-Mx	M-grade
MI-A22-IU	28Vdc	18.8–50Vdc	MI-22x and MI-J2x-Ix	I-grade
MI-A66-IU	270Vdc	125–400Vdc	MI-26x and MI-J6x-Ix	I-grade

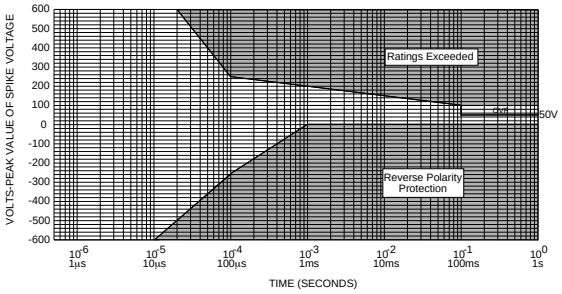
Product Grade Specifications

PARAMETER	PRODUCT GRADE I-Grade	PRODUCT GRADE M-Grade
Storage temperature	-55°C to +125°C	-65°C to +125°C
Operating temperature (baseplate)	-40°C to +100°C	-55°C to +100°C
Power cycling burn-in	12 hours, 25 cycles	96 hours, 200 cycles
Temperature cycled with power off 17°C per minute rate of change	12 cycles -65°C to +100°C	12 cycles -65°C to +100°C
Test data supplied at these temperatures*	-40°C, +80°C	-55°C, +80°C
Warranty	2 years	2 years
Environmental compliance	MIL-STD-810	MIL-STD-810
Derating	NAVMAT P-4855-1A	NAVMAT P-4855-1A

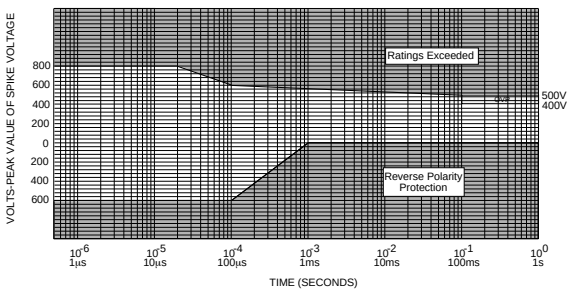
**Test data available for review or download from vicorpower.com*

MI-IAM Safe Operating Area*

28Vdc Input

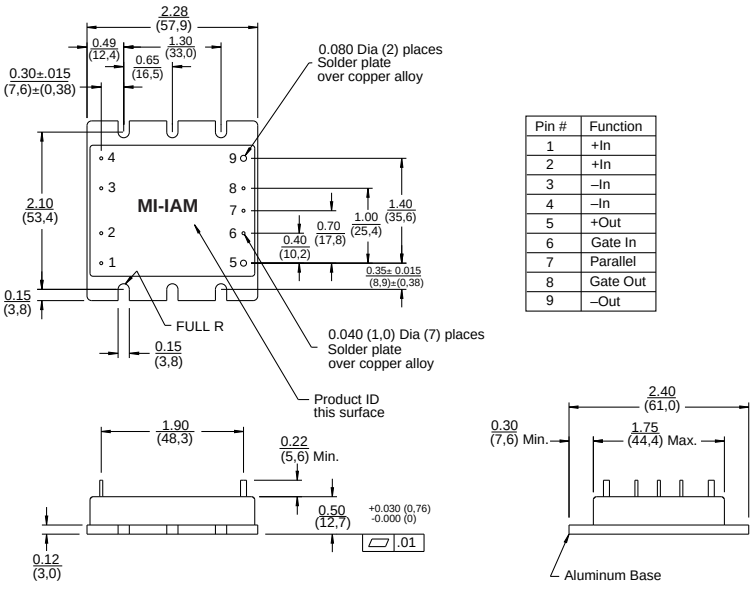


270Vdc Input



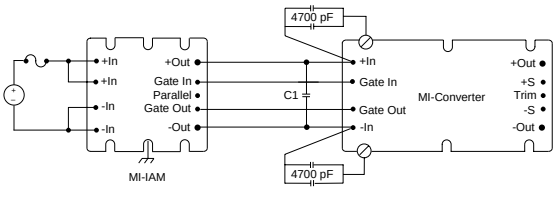
** Refer to input characteristics*

Mechanical Drawing



Pin #	Function
1	+In
2	+In
3	–In
4	–In
5	+Out
6	Gate In
7	Parallel
8	Gate Out
9	–Out

Typical Connection Diagram



Input Voltage Range Capacitance (C1)
28Vdc (18.8-50V) 390µF (Max.)
270Vdc (125-400V) 27µF (Max.)