



MI-200™

*Military
High Density
DC-DC Converters
50 to 100 Watts*

Features

- Inputs:
 - 28 Vdc per MIL-STD-704D
 - 155 Vdc per MIL-STD-1399A
 - 270 Vdc per MIL-STD-704D
- Any Output: 1 to 95 Vdc
- Up to 23W/cubic inch
- MIL-STD-810 Environments
- 80-90% Efficiency
- Remote Sense
- Current Limit
- OVP and Thermal Shutdown
- Power Boosters for Higher Power Outputs
- ZCS Power Architecture
- Low Noise FM Control

Product Highlights

The MI Series is designed for Military applications and is based on Vicor's second generation family of zero-current-switching, component level DC-DC converters. Operating at frequencies in excess of 1 MHz, the MI Series offers state-of-the-art performance in terms of power density, efficiency, noise, ease of use and reliability.

All units are manufactured under a quality system approved to MIL-I-45208 and in ISO 9001-registered facilities. Full epoxy encapsulation in Vicor's industry standard package enables the MI Series to meet MIL-STD-810 environmental requirements for humidity, fungus, salt fog, explosive atmosphere, acceleration, vibration and shock.

Standard features such as wide output trimming/programming, current limiting, remote sense, output inhibit and latching OVP & OTP combine to offer a high degree of protection, versatility and reliability for military power systems.

100

Converter Selection Chart

MI-2 -

Input Voltage			Output Voltage			
Nominal	Range	Transient ⁴	Z	=	2V	2 = 15V
2 = 28V	18 - 50V ¹	60V	Y	=	3.3V	3 = 24V
5 = 155V	100 - 210V	230V	0	=	5V	L = 28V
6 = 270V	125 - 400V ²	475V	M	=	10V	4 = 48V
7 = 165V	100 - 310V ³		1	=	12V	

Product Grade		Operating Temp.
I	=	-40°C to +85°C
M	=	-55°C to +85°C

Output Power		≥5V	<5V
Y	=	50W	10A
X	=	75W	15A
W	=	100W	20A
V	=	—	30A

For additional output power add "Boosters".
Change MI-2xx-xW to MI-Bxx-xW.

Inputs from 16 to 400 Vdc; outputs from 1 to 95 Vdc. Consult factory.

(1) 16V operation at 70% load.

(2) These units rated at 75% load from 125-150 VIN: 5V @ 100W; 2V and 3.3V @ 30A.

(3) Compatible with MI-AIM AC Input Module

(4) Transient voltage for 1 second.

MI-200 Converter/Booster Specifications

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

PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Characteristics					
Input Voltage Range	See Input Voltage Chart				
No Load Power Dissipation		1.35	2	Watts	
Output Characteristics					
Set Point Accuracy		0.5%	1%	V _{NOM}	
Load/Line Regulation		0.05%	0.2%	V _{NOM}	LL to HL, 10% to FL
		0.2%	0.5%	V _{NOM}	LL to HL, NL to 10%
Output Temperature Drift		0.01	0.02	%/°C	
Output Noise - pp		1.0%	1.5%	V _{NOM}	} Whichever is greater 20 MHz BW
		100	150	mV	
Output Voltage Trimming ¹	50%		110%	V _{NOM}	
Remote Sense Compensation	0.5			Volts	
OVP Set Point	115%	125%	135%	V _{NOM}	Latching
Current Limit	105%		125%	I _{NOM}	Auto restart
Short Circuit Current	105%		130%	I _{NOM}	Auto restart
Control Pin Characteristics					
Gate In High Threshold			6	Volts	
Gate In Low Threshold	0.65			Volts	
Gate In Low Current			6	mA	
Power Sharing Accuracy	0.95		1.05		
Isolation Characteristics					
Isolation (Input to Output)	3,750			V _{RMS}	
Isolation (Output to Baseplate)	500			V _{RMS}	
Isolation (Input to Baseplate)	2,500			V _{RMS}	
Input/Output Capacitance		50	75	pF	
Environmental (MIL-STD-810D)					
Altitude - Method 500.2	40,000			feet	Procedure 3
Humidity - Method 507.2	86, 240			%, hours	Procedure 1, Cycle 1
Acceleration - Method 513.3	9 g's				Procedure 2
Vibration - Method 514.3	20 g's				Procedure 1, Category 6
Shock - Method 516.3	40 g's				Procedure 1
Reliability (MIL-HDBK-217E)					
25°C Ground Benign: G.B.		864,000		Hours	
50°C Naval Sheltered: N.S.		111,000		Hours	
65°C Airborne Inhabited Cargo: A.I.C.		81,000		Hours	
Thermal Characteristics					
Efficiency		80-90%			
Baseplate to Sink		0.2		°C/Watt	With thermal pads
Shutdown Temperature	90	95	105	°C	Latching
Baseplate Operating Temperature			+85	°C	See Product Grade
Storage Temperature			+100	°C	See Product Grade
Mechanical Specifications					
Volume		4.35		in ³	
Weight		6.0 (170)		Ounces (Grams)	

¹ 12V and 15V outputs, standard trim range ±10%. Consult factory for wider trim range.

Additional Defense Products

MI-J00™

Military DC-DC Converters

- Inputs: 28, 155, 270 Vdc
- Single Output: 1 to 95 Vdc
- 10W, 25W and 50W
- Up to 23 Watts/Cubic Inch
- 80-90% Efficiency
- Size: 2.28" x 2.4" x 0.5"
(57,9 x 61,0 x 12,7)
- MIL-STD-810 Environments

MI-RAM™

Ripple Attenuator Module

- Reduces PARD to <3 mV p-p
- Compatible with Any MI-based
Product 5 to 50 Vdc
- Full Attenuation Up to 20A Load
- No Adjustment Required
- 93-99% Efficiency
- Converter Sense, Trim, OV and
OI Retained
- Size: 2.28" x 2.4" x 0.5"
(57,9 x 61,0 x 12,7)
- MIL-STD-810 Environments

MI-IAM™

Input Attenuator/Filter Module

- 28 and 270 Vdc Inputs
- MIL-STD-461 EMI Filter
- MIL-STD-704A and MIL-STD-1275A
- Reverse Polarity Protection
- 250W Output
- Size: 2.28" x 2.4" x 0.5"
(57,9 x 61,0 x 12,7)
- MIL-STD-810 Environments

Product Grade Specifications

Parameter	Product Grade	
	I	M
Storage Temperature	-55°C to +100°C	-65°C to +100°C
Operating Temperature (baseplate)	-40°C to +85°C	-55°C to +85°C
Power Cycling Burn-in	12 hours, 25 cycles	96 hours, 200 cycles
Temperature Cycled with Power Off	48 hours, 12-16 cycles	48 hours, 12-16 cycles
	-55°C to +100°C	-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

Mechanical Drawing

