



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.

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Converter Selection Chart

MI-2 • • - • •

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

•• 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.

