



MI-MegaMod™ Family

**Military Chassis Mount DC-DC Converters 10 to 300W
Single, Dual, Triple Outputs**

Product Highlights

Vicor's MI-MegaMod family of single, dual, and triple output DC-DC converters provide power system designers with cost-effective, high-performance, off-the-shelf solutions to applications that might otherwise require a custom supply.

Incorporating standard MI-200 or MI-J00 family converters in rugged, chassis mount packages, MegaMods can be ordered with single, dual, or triple outputs, having a combined output power of up to 300W. Totally isolated outputs eliminate efficiency penalties and output interaction problems.

Features

- ✦ Inputs: 28, 155, 165 and 270Vdc
- ✦ Any output: 2 to 48Vdc
- ✦ Up to 13.5W/in³
- ✦ High efficiency
- ✦ Remote sense
- ✦ ZVS/ZCS power architecture
- ✦ Low noise FM control
- ✦ Size — 1-up half-size: 2.58" x 2.5" x 0.62" (65,5 x 63,5 x 15,7mm)
- ✦ Size — 1-up full-size: 4.9" x 2.5" x 0.62" (124,5 x 63,5 x 15,7mm)
- ✦ Size — 2-up half-size: 2.58" x 4.9" x 0.62" (65,5 x 124,5 x 15,7mm)
- ✦ Size — 2-up full-size: 4.9" x 4.9" x 0.62" (124,5 x 124,5 x 15,7mm)
- ✦ Size — 3-up half-size: 2.58" x 7.3" x 0.62" (65,5 x 185,4 x 15,7mm)
- ✦ Size — 3-up full-size: 4.9" x 7.3" x 0.62" (124,5 x 185,4 x 15,7mm)

Configuration Chart

Full-Size MegaMods			Number of Modules
Model	Power Range	Dimensions	
Single Output			
MI-L	50 – 100W	4.9" x 2.5" x 0.62"	1
MI-M	150 – 200W	4.9" x 4.9" x 0.62"	2
MI-N	300W	4.9" x 7.3" x 0.62"	3
Dual Output			
MI-P	100 – 200W	4.9" x 4.9" x 0.62"	2
MI-Q	200 – 300W	4.9" x 7.3" x 0.62"	3
Triple Output			
MI-R	150 – 300W	4.9" x 7.3" x 0.62"	3
Half-Size MegaMods			
Single Output			
MI-LJ	10 – 50W	2.58" x 2.5" x 0.62"	1
Dual Output			
MI-PJ	20 – 100W	2.58" x 4.9" x 0.62"	2
Triple Output			
MI-RJ	30 – 150W	2.58" x 7.3" x 0.62"	3

Input Voltage		
Nominal	Range	Transient
2=28Vdc	18 – 50V ⁽¹⁾	60V
5=155Vdc	100 – 210V	230V
6=270Vdc	125 – 400V ⁽²⁾	475V
7=165Vdc	100 – 310V ⁽³⁾	

Output Voltage		
Z = 2V	T = 6.5V	N = 18.5V
Y = 3.3V	R = 7.5V	3 = 24V
0 = 5V	M = 10V	L = 28V
X = 5.2V	1 = 12V	J = 36V
W = 5.5V	P = 13.8V	K = 40V
V = 5.8V	2 = 15V	4 = 48V

Product Grade
Full-Size
I = -40°C to +85°C
M = -55°C to +85°C
Half-Size
I = -40°C to +100°C
M = -55°C to +100°C

Output Power/Current	
Full-Size	Half-Size
≥5V <5V	≥5V <5V
Y = 50W 10A	A = 10W —
X = 75W 15A	Z = 25W 5A
W = 100W 20A	Y = 50W 10A
V = — 30A	

Output Power/Current	
≥5V	<5V
V = 150W	30A
U = 200W	—
S = —	60A

Output Power/Current	
≥5V	<5V
S = 300W	—
P = —	90A

⁽¹⁾ 16V operation at 75% load.

⁽²⁾ These units rated at 75% load from 125 – 150Vin: Full-size – 5Vout @ 100W; 2Vout and 3.3Vout @ 30A
Half-Size – 5Vout @ 50W; 2V and 3.3V @ 10A.

⁽³⁾ For use with Vicor's MI-AIM

Full-Size

(At $T_{BP} = 25^{\circ}\text{C}$, nominal line and 75% load, unless otherwise specified)

PARAMETER	MIN	TYP	MAX	UNITS	NOTES
Input Characteristics					
Inrush charge		120×10^{-6}	200×10^{-6}	Coulombs	Nominal line, per module
Input reflected ripple current – pp:		10		% I_{in}	Nominal line, full load
Input ripple rejection		$30 + 20\text{Log} \left(\frac{V_{in}}{V_{out}} \right)$		dB	120Hz, nominal line
		$20 + 20\text{Log} \left(\frac{V_{in}}{V_{out}} \right)$		dB	2400Hz, nominal line
No load power dissipation		1.35	2.0	Watts	Per module
Output Characteristics					
Setpoint accuracy		0.5	1.0	% V_{nom}	
Load/line regulation		0.05	0.2	% V_{nom}	LL to HL, 10% to FL
Load/line regulation		0.2	0.5	% V_{nom}	LL to HL, NL to 10%
Output temperature drift		0.01	0.02	% / $^{\circ}\text{C}$	Over rated temperature
Long term drift		0.02		%/1K hours	
Output ripple – p-p: $\leq 10\text{V}$		80	150	mV	20MHz bandwidth
12-48V		0.75	1.5	%	20MHz bandwidth
Output voltage trimming ⁽¹⁾	50		110	% V_{nom}	
Total remote sense compensation	0.5			Vdc	0.25V max. neg. leg
OVP setpoint	115	125	135	% V_{nom}	Recycle power
Current limit	105		125	% I_{nom}	Automatic restart
Short circuit current			130	% I_{nom}	
Control Pin Characteristics					
Gate out impedance		50		Ohms	
Gate in impedance		10^3		Ohms	
Gate in open circuit voltage		6.0		Vdc	Use open collector
Gate in low threshold	0.65			Vdc	
Gate in low current			6.0	mA	
Isolation Characteristics					
Isolation (input to output)	3,000			Vrms	
Isolation (output to baseplate)	500			Vrms	
Isolation (input to baseplate)	1,500			Vrms	
Thermal Characteristics					
Efficiency		80-90		%	
Baseplate to chassis		0.1		$^{\circ}\text{C}/\text{Watt}$	
Thermal shutdown	90	95	105	$^{\circ}\text{C}$	
Mechanical Specifications					
Weight					
1-up		9.0 (255)		ounces (grams)	
2-up		1.2 (525)		pounds (grams)	
3-up		1.7 (780)		pounds (grams)	

⁽¹⁾ 10V, 12V, and 15V outputs, standard trim range $\pm 10\%$. Consult factory for wider trim range.

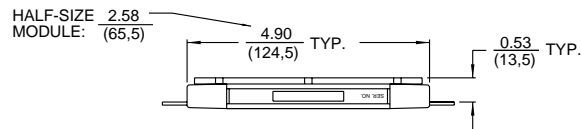
Half-Size

(At $T_{BP} = 25^{\circ}\text{C}$, nominal line and 75% load, unless otherwise specified)

PARAMETER	MIN	TYP	MAX	UNITS	NOTES
Input Characteristics					
Inrush charge		60×10^{-6}	100×10^{-6}	Coulombs	Nominal line, per module
Input reflected ripple current – pp:		10		% I_{in}	Nominal line, full load
Input ripple rejection		$30 + 20\text{Log} \left(\frac{V_{in}}{V_{out}} \right)$		dB	120Hz, nominal line
		$20 + 20\text{Log} \left(\frac{V_{in}}{V_{out}} \right)$		dB	2400Hz, nominal line
No load power dissipation		1.35	2.0	Watts	Per module
Output Characteristics					
Setpoint accuracy		0.5	1.0	% V_{nom}	
Load/line regulation		0.05	0.2	% V_{nom}	LL to HL, 10% to FL
Load/line regulation		0.2	0.5	% V_{nom}	LL to HL, NL to 10%
Output temperature drift		0.01	0.02	% / $^{\circ}\text{C}$	Over rated temperature
Long term drift		0.02		%/1K hours	
Output ripple – p-p: $\leq 10\text{V}$		80	150	mV	20MHz bandwidth
12-48V		0.75	1.5	%	20MHz bandwidth
Output voltage trimming ⁽¹⁾	50		110	% V_{nom}	
Total remote sense compensation	0.5			Vdc	0.25V max. neg. leg
Current limit	105		125	% I_{nom}	Automatic restart
Control Pin Characteristics					
Gate out impedance		50		Ohms	
Gate in impedance		10^3		Ohms	
Gate in open circuit voltage		6.0		Vdc	Use open collector
Gate in low threshold	0.65			Vdc	
Gate in low current			6.0	mA	
Isolation Characteristics					
Isolation (input to output)	3,000			Vrms	
Isolation (output to baseplate)	500			Vrms	
Isolation (input to baseplate)	1,500			Vrms	
Thermal Characteristics					
Efficiency		80-90		%	
Baseplate to chassis		0.1		$^{\circ}\text{C}/\text{Watt}$	
Mechanical Specifications					
Weight					
1-up		4.5 (127)		ounces (grams)	
2-up		8.8 (250)		ounces (grams)	
3-up		13.3 (377)		ounces (grams)	

⁽¹⁾ 10V, 12V, and 15V outputs, standard trim range $\pm 10\%$. Consult factory for wider trim range.

Inputs



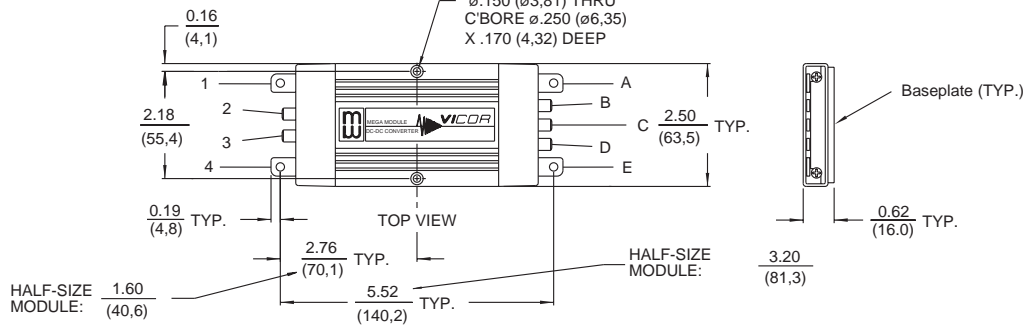
Outputs

Side view (all models)

1-Up

L- and LJ-Series

L- and LJ-Series



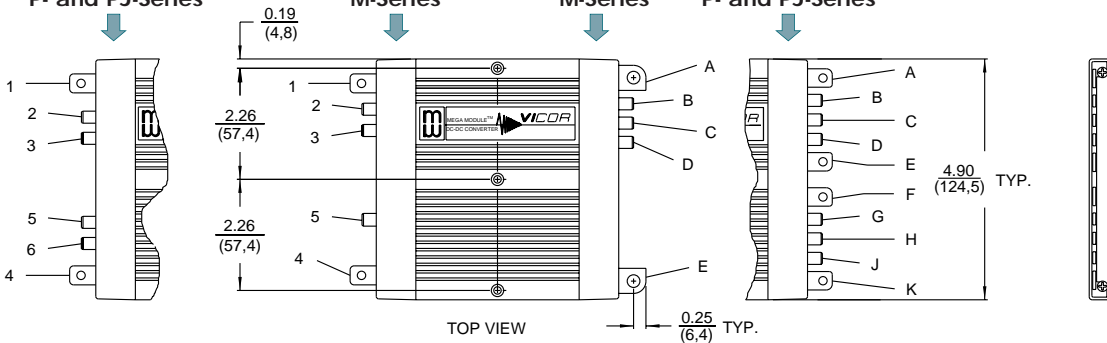
2-Up

P- and PJ-Series

M-Series

M-Series

P- and PJ-Series



3-Up

R- and RJ-Series

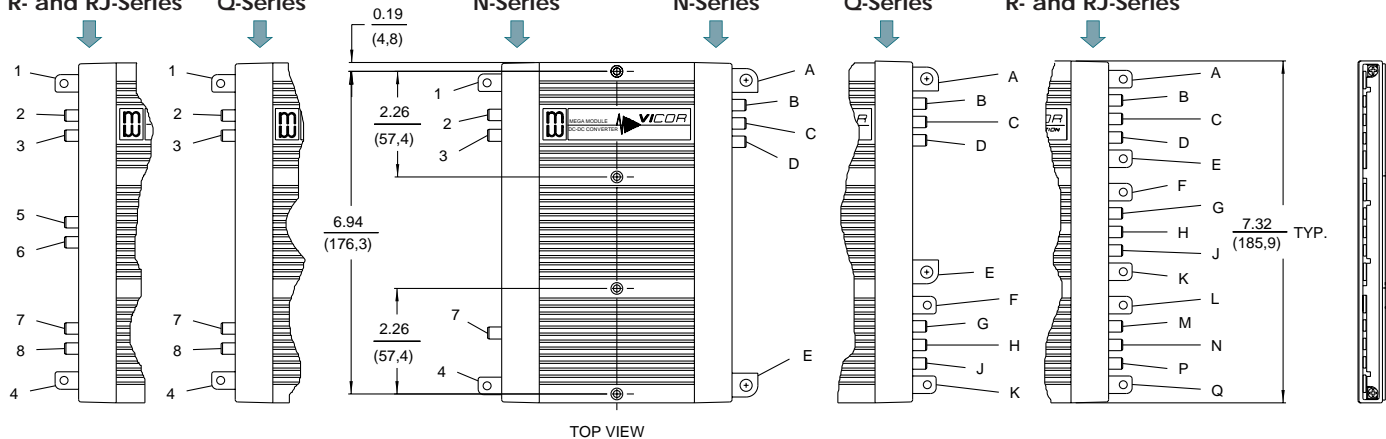
Q-Series

N-Series

N-Series

Q-Series

R- and RJ-Series



Inputs		Outputs		
1 -Input	5 Gate Out #2	Output #1	Output #2	Output #3
2 Gate Out #1	6 Gate In #2	A -Output	F -Output	L -Output
3 Gate In #1	7 Gate Out #3	B -Sense	G -Sense	M -Sense
4 +Input	8 Gate In #3	C Trim	H Trim	N Trim
		D +Sense	J +Sense	P +Sense
		E +Output	K +Output	Q +Output

Mounting Information
Use #6 machine hardware torqued to 5-7 in-lbs.