



## 10 to 300 Watts DC-DC Converters Single, Dual, Triple Output Chassis Mount

### Features & Benefits

- Inputs: 28, 155, 165 and 270V<sub>DC</sub>
- One, two or three outputs
- Outputs from 2 to 48V<sub>DC</sub>
- MIL-STD-704D/E/F transient compliance for 28 and 270V<sub>DC</sub>
- MIL-STD-1399A compliance for 155V<sub>DC</sub>
- Up to 13.5 W/in<sup>3</sup>
- High efficiency
- Remote sense
- ZCS power architecture
- Low noise FM control
- 1 Up:  
2.58" x 2.5" x 0.62" (Half Size)  
4.9" x 2.5" x 0.62" (Full Size)
- 3 Up:  
2.58" x 7.3" x 0.62" (Half Size)  
4.9" x 7.3" x 0.62" (Full Size)

### 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.

### Configuration Chart

Full-Size Modules – MegaMod			Junior-Size Modules – MegaMod Jr		
Configuration	Output Power	# of Modules	Configuration	Output Power	# of Modules
<b>Single Output</b>			<b>Single Output</b>		
MI-L	50 – 100 W	1	MI-LJ	10 – 50 W	1
MI-M	150 – 200 W	2			
MI-N	300 W	3			
<b>Dual Output</b>			<b>Dual Output</b>		
MI-P	100 – 200 W	2	MI-PJ	20 – 100 W	2
MI-Q	200 – 300 W	3			
<b>Triple Output</b>			<b>Triple Output</b>		
MI-R	150 – 300 W	3	MI-RJ	30 – 150 W	3

### Input Voltage

Nominal	Range	Transient <sup>[a]</sup>
2 = 28V	18 – 50V <sup>[b]</sup>	60
5 = 155V	100 – 210V	230
6 = 270V	125 – 400V	475
7 = 165V	100 – 310V	n/a

<sup>[a]</sup> Transient voltage for 1 second.    <sup>[b]</sup> 16 V operation at 75% load.

### Output Voltage

Z=2V	T=6.5V <sup>[c]</sup>	N=18.5V
Y=3.3V	R=7.5V <sup>[c]</sup>	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 Temperature (°C)

MegaMod	MegaMod Jr.
I = -40 to +85	-40 to +100
M = -55 to +85	-55 to +100
Refers to Baseplate Temperature	

<sup>[c]</sup> 75W max. module power for 28V input voltage

### Output Power/Current

MegaMod		MegaMod Jr.	
V <sub>OUT</sub> ≥ 5V	V <sub>OUT</sub> < 5V	V <sub>OUT</sub> ≥ 5V	V <sub>OUT</sub> < 5V
Y = 50W	Y = 10A	A = 10W	A = —
X = 75W	X = 15A	Z = 25W	Z = 5A
W = 100W	W = 20A	Y = 50W	Y = 10A
V = —	V = 30A		

### Output Power/Current

V <sub>OUT</sub> ≥ 5V	V <sub>OUT</sub> < 5V
V = 150W	V = 30A
U = 200W	U = —
S = —	S = 60A

### Output Power/Current

V <sub>OUT</sub> ≥ 5V	V <sub>OUT</sub> < 5V
S = 300W	S = —
P = —	P = 90A

## MI-MegaMod Specifications

(typical at T<sub>BP</sub> = 25°C, nominal line, 75% load, unless otherwise specified)

### INPUT SPECIFICATIONS

Parameter	Min	Typ	Max	Unit	Notes
Inrush charge		120x10 <sup>-6</sup>	200x10 <sup>-6</sup>	Coulombs	Nom. line, per module
Input reflected ripple current – pp		10		%I <sub>IN</sub>	Nom. line, full load
Input ripple rejection		30+20Log $\left(\frac{V_{IN}}{V_{OUT}}\right)$		dB	120Hz, nom. line
		20+20Log $\left(\frac{V_{IN}}{V_{OUT}}\right)$		dB	2400Hz, nom. line
No load power dissipation		1.35	2	Watts	Per module

### OUTPUT SPECIFICATIONS

Parameter	Min	Typ	Max	Units	Notes
Setpoint accuracy		0.5	1	%V <sub>NOM</sub>	
Load / line regulation		0.05	0.2	%V <sub>NOM</sub>	LL to HL, 10% to FL
		0.2	0.5	%V <sub>NOM</sub>	LL to HL, NL to 10%
Output temperature drift		0.01	0.02	% / °C	Over rated temp.
Long term drift		0.02		%/1K hours	
Output ripple - pp	≤ 10V	80	150	mV	20MHz bandwidth
	12 – 48V	0.75	1.5	%V <sub>NOM</sub>	2 MHz bandwidth
Output voltage trimming <sup>[a]</sup>	50		110	%V <sub>NOM</sub>	
Total remote sense compensation	0.5			Volts	0.25V max. neg. leg
OVP setpoint	115	125	135	V <sub>NOM</sub>	Recycle power
Current limit	105		125	I <sub>NOM</sub>	Automatic restart
Short circuit current			130	%I <sub>NOM</sub>	

<sup>[a]</sup> 10V to 15V outputs, standard trim range ±10%. Consult factory for wider trim range.

### CONTROL PIN SPECIFICATIONS

Parameter	Min	Typ	Max	Units	Notes
Gate out impedance		50		Ω	
Gate in impedance		10 <sup>3</sup>		Ω	
Gate in open circuit voltage		6.0		Volts	Use open collector
Gate in low threshold	0.65			Volts	
Gate in low current			6.0	mA	

## MI-MegaMod Specifications (Cont.)

## DIELECTRIC WITHSTAND CHARACTERISTICS

Parameter	Min	Typ	Max	Unit	Notes
Isolation (input to output)	3,000			V <sub>RMS</sub>	
Isolation (output to baseplate)	500			V <sub>RMS</sub>	
Isolation (input to baseplate)	1,500			V <sub>RMS</sub>	

## THERMAL CHARACTERISTICS

Parameter	Min	Typ	Max	Units	Notes
Efficiency		80 – 90%			
Baseplate to chassis		0.1		°C/Watt	
Thermal Shutdown (drivers only)	90	95	105	°C	

## MECHANICAL SPECIFICATIONS

Parameter	Min	Typ	Max	Units	Notes
Weight					
1 Up		9.0 (255)		Ounces (Grams)	
2 Up		1.2 (545)		Lbs. (Grams)	
3 Up		1.7 (772)		Lbs. (Grams)	

## MI-MegaMod Specifications

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

### INPUT SPECIFICATIONS

Parameter	Min	Typ	Max	Unit	Notes
Inrush charge		$60 \times 10^{-6}$	$100 \times 10^{-6}$	Coulombs	Nom. line, per module
Input reflected ripple current — pp		10		% $I_{IN}$	Nom. line, full load
Input ripple rejection		$30 + 20 \text{Log} \left( \frac{V_{IN}}{V_{OUT}} \right)$		dB	120Hz, nom. line
		$20 + 20 \text{Log} \left( \frac{V_{IN}}{V_{OUT}} \right)$		dB	2400Hz, nom. line
No load power dissipation		1.35	2	Watts	Per module

### OUTPUT SPECIFICATIONS

Parameter	Min	Typ	Max	Units	Notes
Setpoint 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	%/ $^{\circ}\text{C}$	Over rated temp.
Long term drift		0.02		%/1K hours	
Output ripple, pp					
$\leq 10\text{V}$		80	150	mV	20 MHz bandwidth
12V – 48V		0.75	1.5	% $V_{NOM}$	20 MHz bandwidth
Output voltage trimming <sup>[a]</sup>	50		110	% $V_{NOM}$	
Total remote sense compensation	0.5			Volts	0.25V max. neg. leg
OVP setpoint		N/A			
Current limit	105		125	% $I_{NOM}$	Automatic restart

<sup>[a]</sup> 10V to 15V outputs, standard trim range  $\pm 10\%$ . Consult factory for wider trim range.

### CONTROL PIN SPECIFICATIONS

Parameter	Min	Typ	Max	Units	Notes
Gate out impedance		50		$\Omega$	
Gate in impedance		$10^3$		$\Omega$	
Gate in high threshold		6.0		Volts	Use open collector
Gate in low threshold	0.65			Volts	
Gate in low current			6.0	mA	

## MI-MegaMod Specifications (Cont.)

## DIELECTRIC WITHSTAND CHARACTERISTICS

Parameter	Min	Typ	Max	Unit	Notes
Isolation (input to output)	3,000			V <sub>RMS</sub>	Baseplate earthed
Isolation (output to baseplate)	500			V <sub>RMS</sub>	
Isolation (input to baseplate)	1,500			V <sub>RMS</sub>	

## THERMAL CHARACTERISTICS

Parameter	Min	Typ	Max	Units	Notes
Efficiency		80 – 90%			
Baseplate to chassis		0.1		°C/Watt	

## MECHANICAL SPECIFICATIONS

Parameter	Min	Typ	Max	Units	Notes
Weight					
1 Up		4.5 (127)		Ounces (Grams)	
2 Up		8.8 (250)		Ounces (Grams)	
3 Up		13.3 (377)		Ounces (Grams)	

## MI-MegaMod Mechanical Specifications

Inputs	
1 -Input	5 Gate Out #2
2 Gate Out #1	6 Gate In #2
3 Gate In #1	7 Gate Out #3
4 +Input	8 Gate In #3

Outputs		
Output #1	Output #2	Output #3
A -Output	F -Output	L -Output
B -Sense	G -Sense	M -Sense
C Trim	H Trim	N Trim
D +Sense	J +Sense	P +Sense
E +Output	K +Output	Q +Output

### Inputs

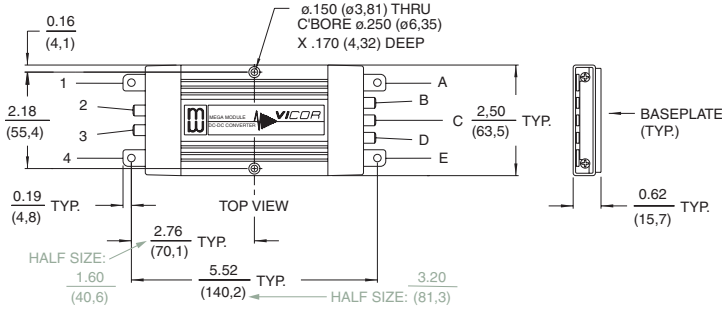
### Outputs



Side view (all models)

### L- and LJ-Series

### L- and LJ-Series

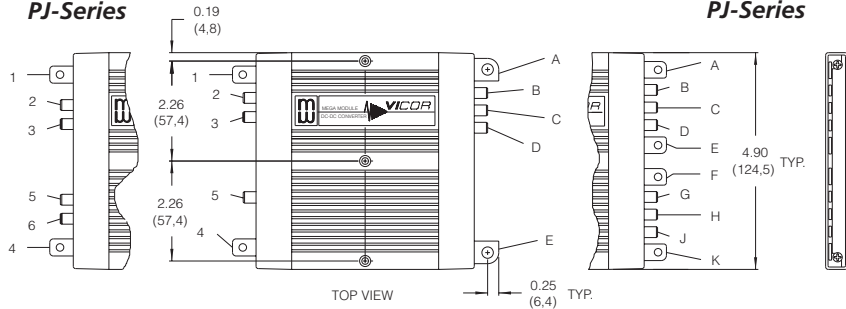


### P- and PJ-Series

### M-Series

### M-Series

### P- and PJ-Series



### Mounting Information

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

### R- and RJ-Series

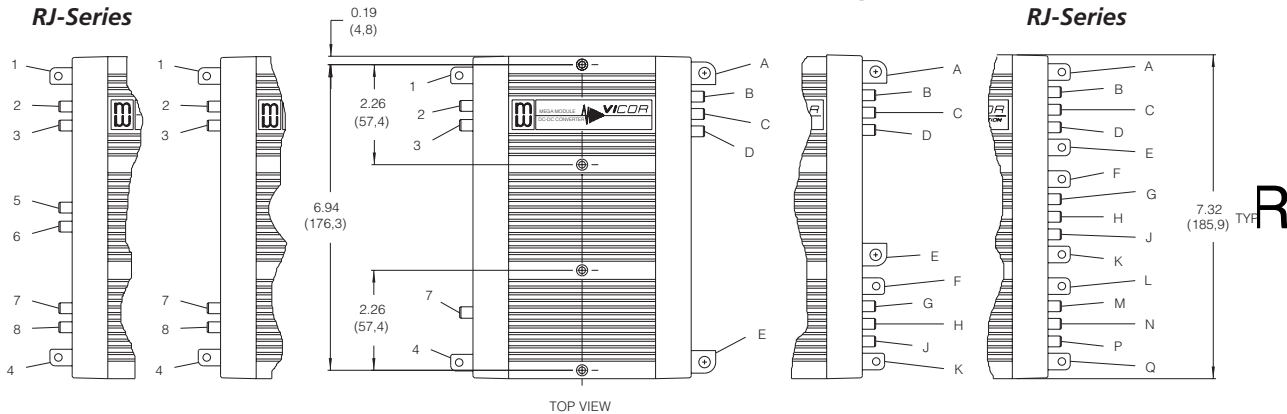
### Q-Series

### N-Series

### N-Series

### Q-Series

### R- and RJ-Series



Terminal and Product Model	Terminal Style	Screw Size	Recommended Torque
-Input, +Input All models	PCB	8-32 UNC	10 in-lb (1.1 N-m)
-Output, +Output L-, P-, R-, LJ-, PJ- & RJ-Series	PCB	8-32 UNC	10 in-lb (1.1 N-m)
M- & N-Series	Metal	1/4-20 UNC	65 in-lb (7.2 N-m)
Q-Series	PCB	8-32 UNC	10 in-lb (1.1 N-m)
Supervisory All models	Metal	1/4-20 UNC	65 in-lb (7.2 N-m)
Sized to accept AMP Faston® insulated receptacle #2-520184-2			

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**Vicor Corporation**

25 Frontage Road  
Andover, MA, USA 01810  
Tel: 800-735-6200  
Fax: 978-475-6715

**email**

Customer Service: [custserv@vicorpower.com](mailto:custserv@vicorpower.com)  
Technical Support: [apps@vicorpower.com](mailto:apps@vicorpower.com)

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