

MegaMod DC-DC Converter Family

*Installation and Application Notes
Functional and Mechanical Layout*



Product Description

MegaMod and MegaMod Jr. DC-DC converters incorporate one, two, or three Vicor VI-200 or VI-J00 MiniMod converters in a modular package to provide a chassis-mounted alternative to board-mounted power supplies. MegaMods offer 50–600 W of power from 1–3 outputs. MegaMod Jr.'s offer a total of 25–300 W from 1–3 outputs. Each output may be independently sensed, adjusted, and sequenced using the procedures outlined for VI-200 and VI-J00 converters in the Vicor Applications Manual.



MegaMod Family

Single Output

LJ-Series 25–100 W (Jr. Module)

L-Series 50–200 W

M-Series 100–400 W

N-Series 300–600 W

Dual Output

PJ-Series 50–200 W (Jr. Module)

P-Series 100–400 W

Q-Series 150–600 W

Triple Output

RJ-Series 75–300 W (Jr. Module)

R-Series 150–600 W

Materials

- End Caps: Lexan-920 polycarbonate (UL94V-0)
- High-Power Terminals: CD-110 copper with electro-tin plate
- Low-Power Terminals: FR-4, 4 oz. copper with tin plate
- Case: 6063-T5 aluminum (Case is electrically isolated from input and output.)

Installation and Application Notes

Fusing. Safety agency conditions of acceptability require module input fusing. The fuse should be inserted in the +Input lead, not the –Input lead, since opening the –Input lead will cause the gate terminals to rise to the voltage of the +Input lead, which may damage connected modules or devices. Consult the Vicor Application Engineering Department for proper fuse values.

Grounding. If the converter baseplate is accessible to the operator, ground the baseplate to earth/chassis ground. Use the same wire gauge as that specified for your converter’s input wire, below.

Input Wire Gauge. Calculate the input current for MegaMods and MegaMod Jr.’s as follows and use the recommended input wire gauge.

■ $I_{IN} = P_{OUT} / (\eta \times V_{LL})$

P_{OUT} = output power

η = efficiency = 0.8

V_{LL} = low line voltage

■ *Example:*

$I_{IN} = 300 / (0.8 \times 42) = 8.93A$

Use a #16 input wire.

<i>Input Current</i>	<i>Input Wire Gauge</i>
16.5 A–26.1 A	#12
10.4 A–16.4 A	#14
6.6 A–10.3 A	#16
4.1 A–6.5 A	#18
2.6 A–4.0 A	#20
0 A–2.6 A	#22

Input Source Impedance. The converter should be connected to an input source that exhibits low AC impedance. If source impedance is questionable, mount a small electrolytic capacitor close to the module voltage input pins. This will restore low AC impedance while avoiding the potential resonance associated with “high-Q” film capacitors. The minimum value of the capacitor, in microfarads, should be $C(\mu F) = 400 \div V_{IN}$ minimum. Example: V_{IN} minimum for a VI-260-CV module is 200 V. The minimum capacitance would be $400 \div 200 = 2 \mu F$.

(continued on page 6)

Functional and Mechanical Layout

These drawings show MegaMods (full size). Input and output configurations for Jr. modules (half size) are the same where indicated. Where dimensions differ for Jr. modules, *the Jr. measurements are in orange*.

Mounting Information

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

Inputs

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

Outputs

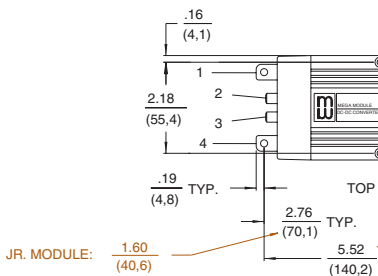
- Output #1
- A -Output
 - B -Sense*
 - C Trim*
 - D +Sense*
 - E +Output

- Output #2
- F -Output
 - G -Sense*
 - H Trim*
 - J +Sense*
 - K +Output

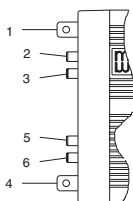
- Output #3
- L -Output
 - M -Sense*
 - N Trim*
 - P +Sense*
 - Q +Output

Inputs

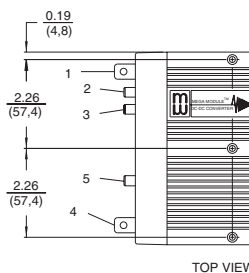
L- and LJ-Series



P- and PJ-Series



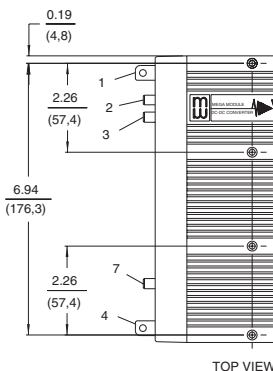
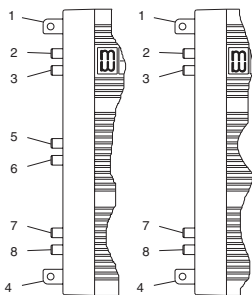
M-Series



R- and RJ-Series

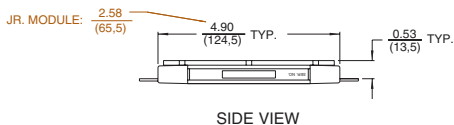
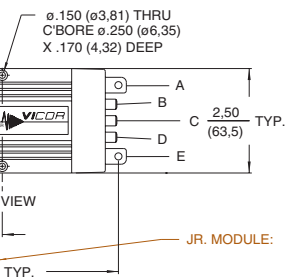
Q-Series

N-Series

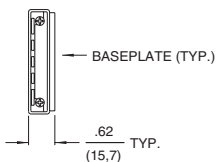


Outputs

L- and LJ-Series



All Models



* For units with BatMods

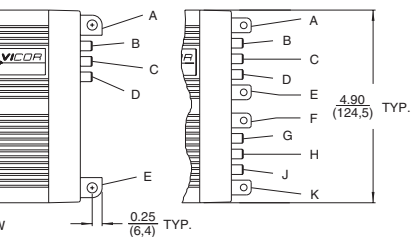
-Sense = I_{MON}

Trim = I_{TRIM}

+Sense = V_{TRIM}

M-Series

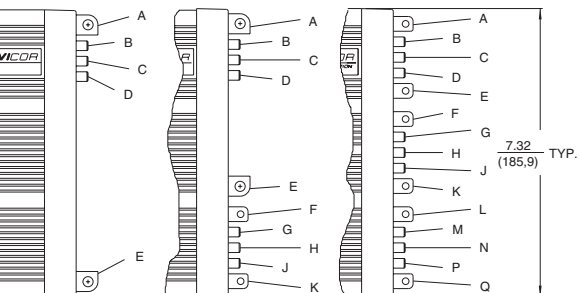
P- and PJ-Series



N-Series

Q-Series

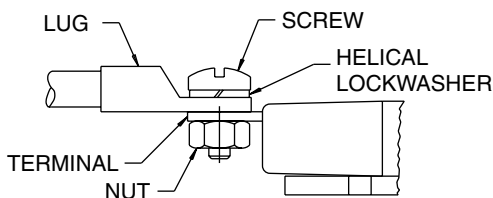
R- and RJ-Series



(continued from page 3)

Input Transients. Do not exceed the converter's transient input voltage rating. Vicor VI-IAM Input Attenuator Modules or surge suppressors, in combination with appropriate filtering, should be used in applications where source transients may be induced by load changes, blown fuses, etc. NOTE: On any converter module with a high line rating in excess of 250 Vdc, do not let the rate of change of input voltage exceed 10 V/ μ s for any input voltage change in excess of 250 V.

Terminal Connection Assembly. The drawing below illustrates the assembly of parts for proper power terminal connections. Please consult the table for the recommended torque level for each screw size.



Ref. Drawing: 10875

<i>Terminal and Product Model</i>	<i>Terminal Style</i>	<i>Screw Size</i>	<i>Recommended Torque</i>
-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	18 in-lb (2.0 N-m)
Q-Series	PCB Metal	8-32 UNC 1/4-20 UNC	10 in-lb (1.1 N-m) 18 in-lb (2.0 N-m)
Supervisory All models	Sized to accept AMP Faston® insulated receptacle #2-520184-2		

Output Wire Gauge. Use the output wire gauge that corresponds to the output current of your converter, below:

105 A–160 A : #4	26 A–40 A : #10	7 A–10 A : #16
66 A–104 A : #6	16 A–25 A : #12	4 A–6 A : #18
41 A–65 A : #8	11 A–15 A : #14	0 A–3 A : #20

Output Voltage Trimming. Do not trim the outputs higher than 110% of their nominal output voltage. When an output is trimmed up, do not exceed its maximum rated output power.

Operating Temperature. Do not allow the baseplate of the module to exceed 85°C for MegaMods or 100°C for MegaMod Jr.’s. The mounting interface area should be flat within 0.005", free of burrs, and coated with thermal compound (Wakefield Engineering Type 120 or equivalent, or a thermal pad). Depending on the power level and ambient temperature, additional cooling measures may be required. **Note:** For configurations using three 12 V input (75 W) or 24 V input (150 W) modules and operating at ambient temperatures in excess of 50°C, please consult Vicor’s Applications Engineering Department.

For More Information

The Vicor Applications Manual and product data sheets contain complete information about MegaMods and MegaMod Jr.’s. To receive literature or to consult an applications engineer about installation or operation of these products, contact your nearest Vicor office. (See page 8.) Vicor’s Applications Manual is also available on-line at: vicorpower.com/techsupport/apps-man/apps_toc.htm.

(Bitte lesen Sie die Sicherheits-Vorschriften auf Seite 8.)

Sicherungen. Die Zulassungsbestimmungen der Sicherheitsbehörden machen es erforderlich, daß die Module abgesichert werden. Die Sicherung muß in die +Input Leitung geschaltet werden, nicht in die –Input Leitung, da eine Unterbrechung der –Input Leitung bewirken würde, daß die Gate-Anschlüsse auf das Spannungspotential der +Input Leitung ansteigen würden. Dies könnte angeschlossene Module oder Geräte beschädigen. Sprechen Sie bitte die Vicor Applikationsabteilung an, dort erhalten Sie Daten zu den richtigen Sicherungen.

Erdung. Um den IEC 950 Klasse I Erdungsforderungen zu entsprechen, muß die Grundplatte an Erde/Chassis angeschlossen werden, wenn der Nutzer die Wandler-Grundplatte berühren kann. Verwenden Sie dieselbe Kabelstärke wie die für das Eingangskabel Ihres Wandlers angegebene. Siehe Tabelle Seite 3.

Betriebstemperatur. Bei Mega Modulen darf die Außenseite der Module eine Temperatur von 85 Grad Celsius nicht überschreiten, bei Mega Modulen Jr. liegt die Grenze bei 100 Grad Celsius.

Weitere Informationen. Das Vicor Applications Manual und Produkt-Datenblätter enthalten ausführliche Informationen zu Mega Modulen und Mega Modulen Jr.. Fordern Sie bitte Unterlagen bei Vicor oder Ihrer nächsten Vicor Vertretung an.

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vicorpower.com

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