VIPAC Array Chassis Mounted DC Converter User Guide

Contents

VIPAC Array™

VIPAC Array Chassis Mounted DC Converter

Product Information

Specifications

- **Product Name:** VIPAC Array
- **Product Type:** Power Systems
- **Configuration Guide:** Available
- **Recommended for New Designs:** Not Recommended

Product Overview
The VIPAC Array is a highly flexible system of DC input, and power building blocks that can be configured with as many as four user-definable outputs on a low-profile, cold plate chassis. VIPAC Array offers the convenience of a prepackaged, chassis mount solution with the performance and power density of Vicor's Maxi, Mini, Micro Series modules, and DC-DC converters.

For technical information refer to the Design Guide & Applications Manual for Maxi, Mini, Micro Family DC-DC Converters and Accessory Modules.

Features:

- Optional current share (single output)
- Onboard fusing
- Global enable/disable

Vicor's VCAD configuration tool provides expedited part configuration, part number, price, and delivery information by selecting standard Maxi, Mini, and Micro modules for use within the VIPAC Array based on the application requirements. The modules are chosen based on the input and output requirements and the closest, but higher power level that is available to that specified. Specifications for these can be found on their respective data sheets.

Vicor's Maxi, Mini, Micro Series DC-DC Converters (1/4 Brick Modules Shown)

Standard Input Voltage Ranges:

- **Note:** 24, 28, 48, 72, 110, and 150 V input VIPAC Arrays are designed primarily for military COTS and industrial applications and do not carry safety agency approvals.
- **Choice of Output Termination:**
  - LugMate
  - PlugMate
- **Standard Output Voltages:** 2, 3.3, 5, 8, 12, 15, 24, 28, 36, 48 Vdc

Product Variants

Model	Dimensions (mm)	Weight	Output Configuration	Total Output Power
VA-A	92.0 x 170.0 x 19.8	1.3 lb (590 g)	Single or dual-output	Up to 600 W
VA-B	92.0 x 170.0 x 19.8	1.3 lb (590 g)	Single, dual, or triple outputs	Up to 600 W total
VA-E	92.0 x 191.0 x 19.8	1.4 lb (635 g)	Dual or triple outputs	Up to 750 W total
VA-F	92.0 x 191.0 x 19.3	1.3 lb (608 g)	Dual, triple, or quad outputs	Up to 600 W total
VA-C	92.0 x 170.0 x 19.3	1.1 lb (499 g)	Dual or triple outputs	Up to 450 W total
VA-G/K	92.0 x 112.0 x 19.8	0.7 lb (318 g)	Single output	Up to 300 W
VA-D/J	92.0 x 170.0 x 19.8	1.1 lb (499 g)	Single output	Up to 600 W
VA-H	92.0 x 112.0 x 19.8	0.7 lb (318 g)	Single or dual outputs	Up to 300 W

Note:
Output numbering convention left to right facing output connections. Model #'s and total output power capabilities are determined using VCAD and are application-specific.

Technical Support Contacts
For technical support, please visit vicorpower.com/vcad

Product Usage Instructions

Input and Output Connections
The VIPAC Array requires DC input and provides multiple user-definable outputs. To connect the inputs and outputs:

1. Ensure that the input voltage is within the specified range for the VIPAC Array variant being used.
2. Connect the positive and negative terminals of the DC input source to the designated input terminals on the VIPAC Array.
3. For each desired output, connect the positive and negative terminals of the load to the corresponding output terminals on the VIPAC Array.

Mounting Options
The VIPAC Array offers various mounting options:

- **Chassis Mount:** The VIPAC Array can be mounted on a chassis using appropriate screws and mounting holes.

- **Coldplate Mount:** The VIPAC Array can be mounted on a cold plate using appropriate screws and mounting holes. This allows for better heat dissipation.

Mechanical Drawings
For detailed mechanical drawings and dimensions of each VIPAC Array variant, please refer to the product's respective documentation or contact technical support.

Frequently Asked Questions (FAQ)

- **Is the VIPAC Array recommended for new designs?**
  No, the VIPAC Array is not recommended for new designs.
- **What is the maximum output power of the VIPAC Array?**
  The maximum output power varies depending on the specific variant of the VIPAC Array. Please refer to the product variants section for more details.
- **Can the VIPAC Array be used in military and industrial applications?**
  Yes, certain VIPAC Array variants with specific input voltage ranges are designed for military COTS and industrial applications.

PRODUCT OVERVIEW

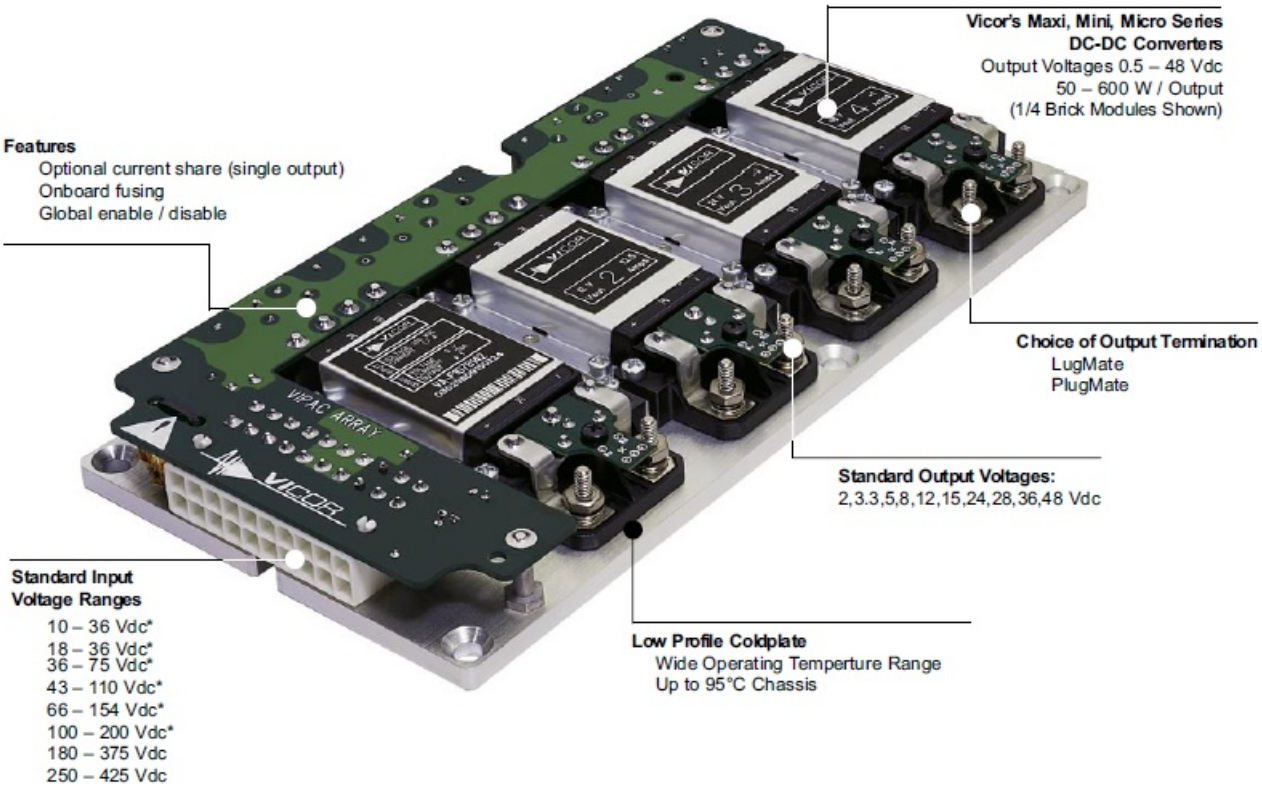
The VIPAC Array is a highly flexible system of DC input, and power building blocks that can be configured with as many as four user-definable outputs on a low-profile, cold plate chassis. VIPAC Array offers the convenience of a prepackaged, chassis mount solution with the performance and power density of Vicor's Maxi, Mini, Micro Series modules, and DC-DC converters.

Using Vicor's VCAD configuration tool, (**vicorpower.com/vcad**), designers are able to quickly specify VIPAC Arrays with standard inputs of 24, 28, 48, 72, 110, 150, 300, or 375 Vdc and standard outputs from 2 to 48 Vdc at power levels up to 600 Watts per output. A total of 8 standard chassis configurations offer the user a choice of power and mechanical options to fit most designs. Short cycle time and rapid delivery make the VIPAC Array a valuable tool for power system prototyping and development efforts as well.

For technical information refer to "Design Guide & Applications Manual for Maxi, Mini, Micro Family DC-DC Converters and Accessory Modules"

VIPAC Arrays are ideal for use in distributed and modular power systems where power density and reliable operation are critical. A current share option is available on single output mod-els enabling them to be used in applications requiring either redundant operation or kilowatts of power. The 300 and 375 Vdc input versions can be coupled to a bulk AC Front-end to create a modular, scaleable power supply serving a variety of power architectures from centralized to distributed. VIPAC Arrays include internal fusing, a global enable/disable function, and connectorized input and output terminations to speed system installation while a versatile cold plate chassis simplifies thermal management and mounting.

Vicor's VCAD configuration tool provides expedited part configuration, part number, price, and delivery information by selecting standard Maxi, Mini, and Micro modules for use within the VIPAC Array based on the application requirements. The modules are chosen based on the input and output requirements and the closest, but higher power level that is available to that specified. Specifications for these can be found in their respective data sheets.



Note:
24, 28, 48, 72, 110, and 150 V input VIPAC Arrays are designed primarily for military COTS and industrial applications and do not carry safety agency approvals.

VA-A

2 MINIS

- 3.62" x 6.69" x 0.78"[a] (92,0 x 170,0 x 19,8 mm)
- 1.3 lb (590 g)
- Single or dual output
- Up to 600 W

VA-B

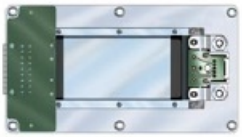
1 MINI, 2 MICROS

- 3.62" x 6.69" x 0.78"[a] (92,0 x 170,0 x 19,8 mm)
- 1.3 lb (590 g)
- Single, dual or triple outputs
- Up to 600 W total

VA-C

3 MICROS

- 3.62" x 6.69" x 0.76"[a] (92,0 x 170,0 x 19,3 mm)
- 1.1 lb (499 g)
- Dual or triple outputs
- Up to 450 W total



VA-D/J

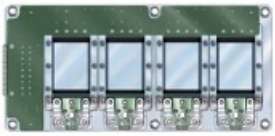
1 MAXI

- 3.62" x 6.69" x 0.78"[a] (92,0 x 170,0 x 19,8 mm)
- 1.1 lb (499 g)
- Single output
- Up to 600 W
- Current share option

VA-E

I MICRO, 2 MINIS

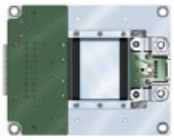
- 3.62" x 7.52" x 0.78"[a] (92,0 x 191,0 x 19,8 mm)
- 1.4 lb (635 g)
- Dual or triple outputs
- Up to 750 W total



VA-F

4 MICROS

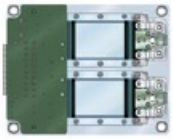
- 3.62" x 7.52" x 0.76"[a] (92,0 x 191,0 x 19,3 mm)
- 1.3 lb (608 g)
- Dual, triple or quad outputs
- Up to 600 W total



VA-G/K

1 MINI

- 3.62" x 4.39" x 0.78"[a] (92,0 x 112,0 x 19,8 mm)
- 0.7 lb (318 g)
- Single output
- Up to 300 W
- Current share option



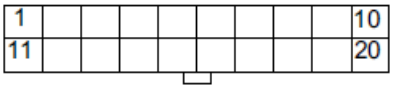
VA-H

2 MICROS

- 3.62" x 4.39" x 0.78"[a] (92,0 x 112,0 x 19,8 mm)
- 0.7 lb (318 g)
- Single or dual outputs
- Up to 300 W

Input/Output Connections

J1 Input Connector
(View looking into J1)



Pin#	Funct.
1-4	– Vin
5-7	+Vin
8	NC / PR bus
9	PE protective earth
10	Neg. enable
11-13	– Vin
14-17	+Vin
18	NC / PR bus
19	PE protective earth
20	Pos. enable

VA-J and VA-K configurations only

(300 and 375 Vin single Maxi or single Mini)

Pin#	Funct.
1-3	– Vin
4-6	+Vin
7	NC
8	NC / PR bus
9	PE protective earth
10	Neg. enable
11-13	– Vin
14-16	+Vin
17	NC
18	NC / PR bus
19	PE protective earth
20	Pos. enable

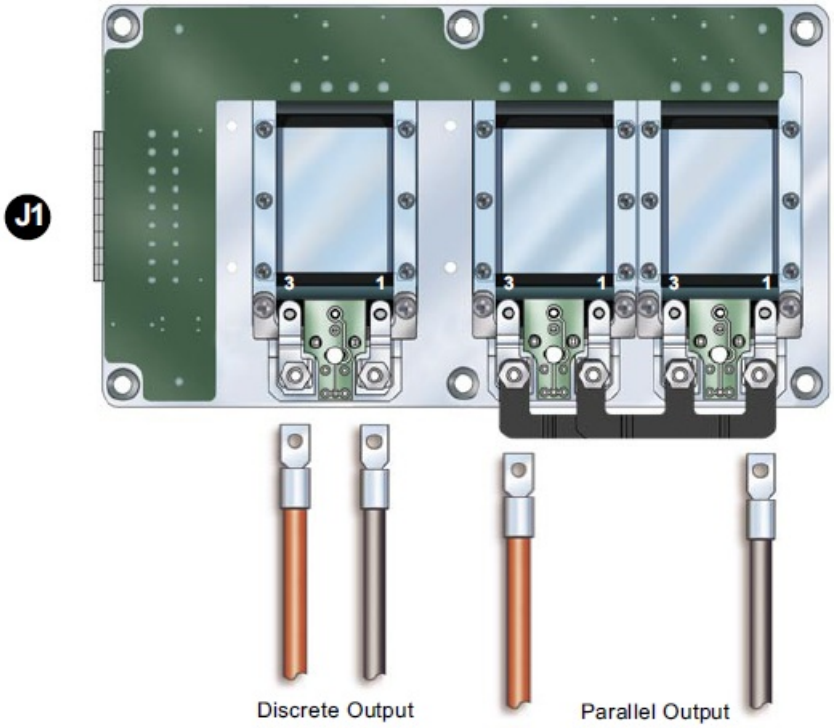
To disable output(s) apply +5 Vdc between pins 10 and 20 in the polarity indicated

Mating Connector

Vicor part #/TE Connectivity part #

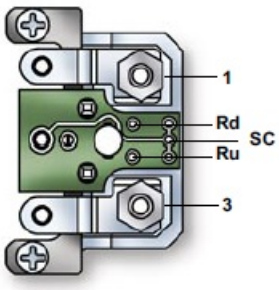
- Housing 2-794657-0

- Contacts 1-106529-2
- Kit 24828



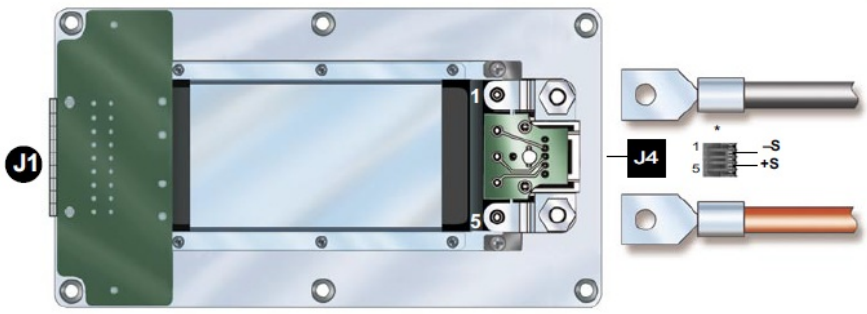
Shown with the output(s) of two modules connected in parallel using a factory-installed bus bar.

Factory-installed Micro LugMate



Pin #	Solder Pad	Function
1		– Vout
	Rd	Trim Down
	SC	Secondary Control
	Ru	Trim Up
3		+ Vout

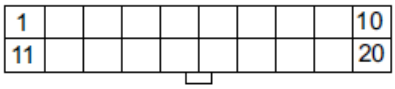
Factory-installed Mini/Maxi LugMate



Pin #	Conn.	Function	Mating Conn.
1		– Vout	
	J4-1	– Vout	*Removable Jumper
	J4-2	– Sense	
	J4-3	Secondary Control	TE Connectivity 644083-5
	J4-4	+ Sense	*Removable Jumper
	J4-5	+ Vout	
5		+ Vout	

Removable jumpers in J4 are factory-installed for local sensing. For remote sensing the +Sense pins should be tied to the same point on the +Out power bus; the -Sense pins should be tied to the same point on the – Out power bus.

J1 Input Connector
(View looking into J1)



Pin#	**Funct.**
1-4	– Vin
5-7	+Vin
8	NC / PR bus
9	PE protective earth
10	Neg. enable
11-13	– Vin
14-17	+Vin
18	NC / PR bus
19	PE protective earth
20	Pos. enable

VA-J and VA-K configurations only

(300 and 375 Vin single Maxi or single Mini)

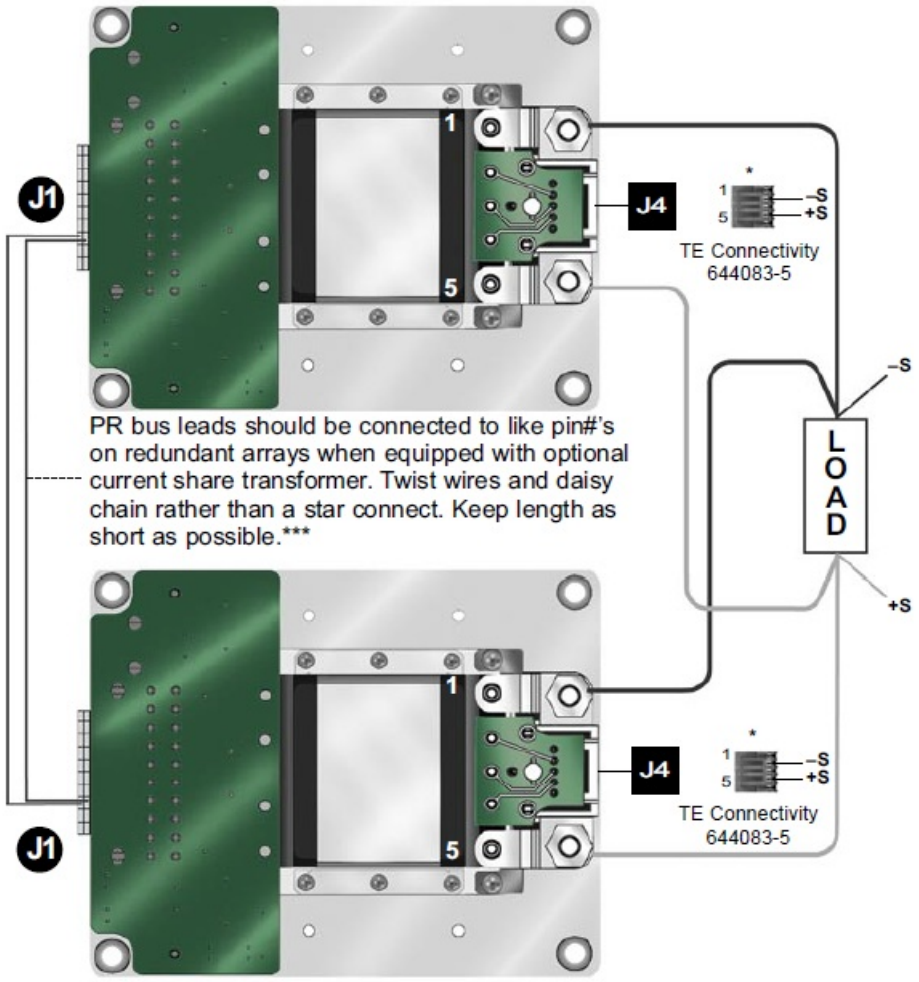
Pin#	**Funct.**
1-3	– Vin
4-6	+Vin
7	NC
8	NC / PR bus
9	PE protective earth
10	Neg. enable
11-13	– Vin
14-16	+Vin
17	NC
18	NC / PR bus
19	PE protective earth
20	Pos. enable

To disable output(s) apply +5 Vdc between pins 10 and 20 in the polarity indicated

Mating Connector

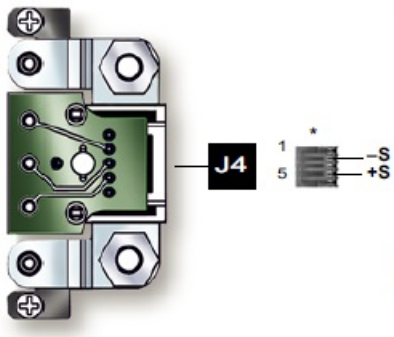
Vicor part #/TE Connectivity part #

- Housing 2-794657-0
- Contacts 1-106529-2
- Kit 24828



Factory installed Mini/Maxi LugMate

Factory installed Mini/Maxi LugMate



Pin #	Conn.	Function	Mating Conn.
1		– Vout	
	J4-1	– Vout	TE Connectivity 644083-5
	J4-2	– Sense	* Removable Jumper
	J4-3	Secondary Control	
	J4-4	+ Sense	* Removable Jumper
	J4-5	+ Vout	
5		+ Vout	

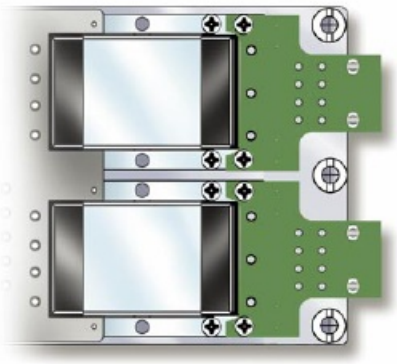
- Removable jumpers in J4 are factory-installed for local sensing. For remote sensing and redundant parallel arrays as illustrated above the +Sense pins should be tied to the same point on the +Out power bus; the -Sense pins should be tied to the same point on the -Out power bus.
- There should be one parent module, this is realized by choosing one module to be the parent and shorting the SC to –S on the other module. Units configured from the factory as paralleled will already have this configured. This should be verified by direct inspection before system integration.
- There should be one parent module, this is realized by choosing one module to be the parent and shorting the SC to –S on the other module. This is done by installing a 0Ω resistor in the space provided on the lugmate / plugmate.

OUTPUT CONNECTION OPTIONS

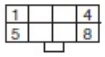
PlugMate
(Factory Installed Option)

Mating Connector Kits

Micro PlugMate



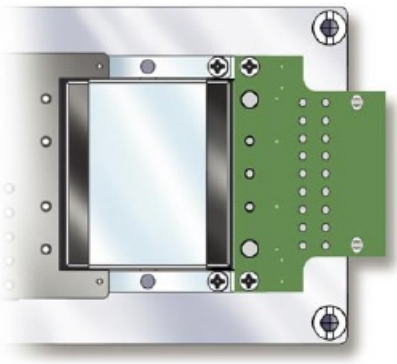
Vicor kit P/N 25073



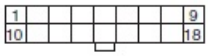
Pin #	Function	Pin #	Function
1	+Vout	5	+Vout
2	+Vout	6	N/C
3	–Vout	7	SC
4	–Vout	8	–Vout

Mating Connector	TE Connectivity P/N	Vicor P/N
Housing	TYC-794657-8	
Pin	1-106529-2	
Kit		25073

Mini PlugMate



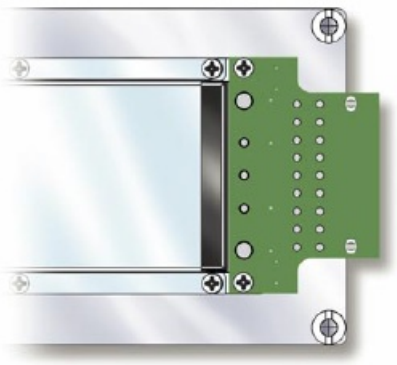
Vicor kit P/N 25067



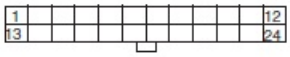
Pin #	Function	Pin #	Function
1	+Vout	10	+Vout
2	+Vout	11	+Vout
3	+Vout	12	+Vout
4	N/C	13	+S
5	N/C	14	SC
6	N/C	15	–S
7	–Vout	16	–Vout
8	–Vout	17	–Vout
9	–Vout	18	–Vout

Mating Connector	TE Connectivity P/N	Vicor P/N
Housing	TYC1-794657-8	
Pin	1-106529-2	
Kit		25067

Maxi PlugMate



Vicor kit P/N 25061

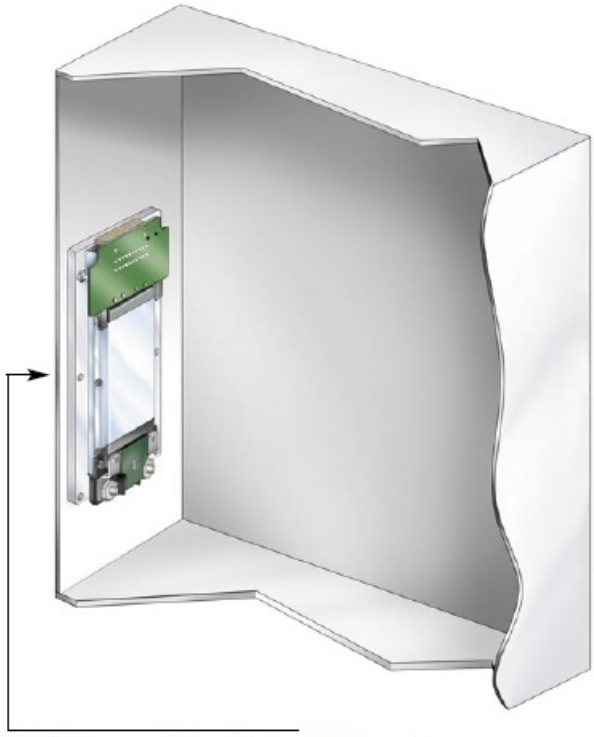


Pin #	Function	Pin #	Function
1	+Vout	13	+Vout
2	+Vout	14	+Vout
3	+Vout	15	+Vout
4	+Vout	16	+Vout
5	+Vout	17	+Vout
6	N/C	18	+S
7	SC	19	–S
8	–Vout	20	–Vout
9	–Vout	21	–Vout
10	–Vout	22	–Vout
11	–Vout	23	–Vout
12	–Vout	24	–Vout

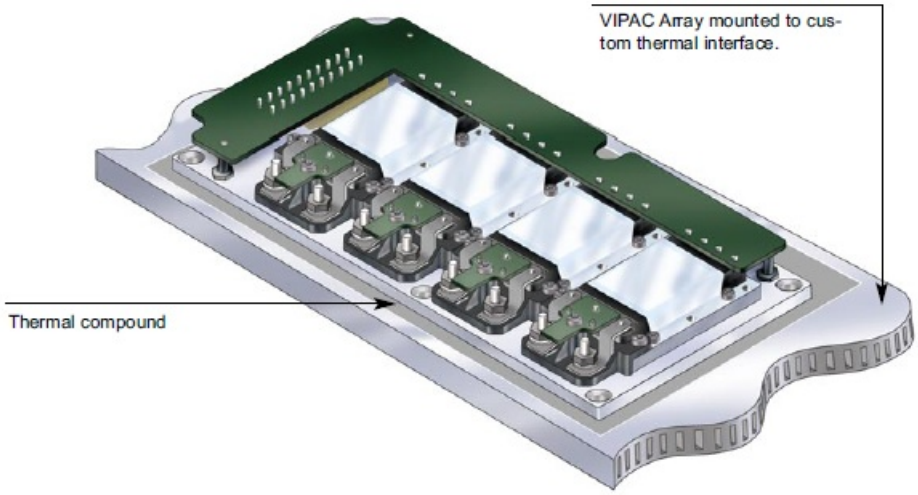
Please Note:
VIPACs that contain multiple modules configured as a single output (paralleled for power or redundancy) MUST have their Outputs and Sense connected at the load. DO NOT OPERATE A PARALLEL CONFIGURATION WITH ONLY ONE MODULE CONNECTED. Additionally, one module must be designated as a “parent” by having all other modules configured as “Boosters”. Boosters are created by shorting the SC pin to –S.

Mounting Options

VIPAC Array with external, user supplied heat sink.



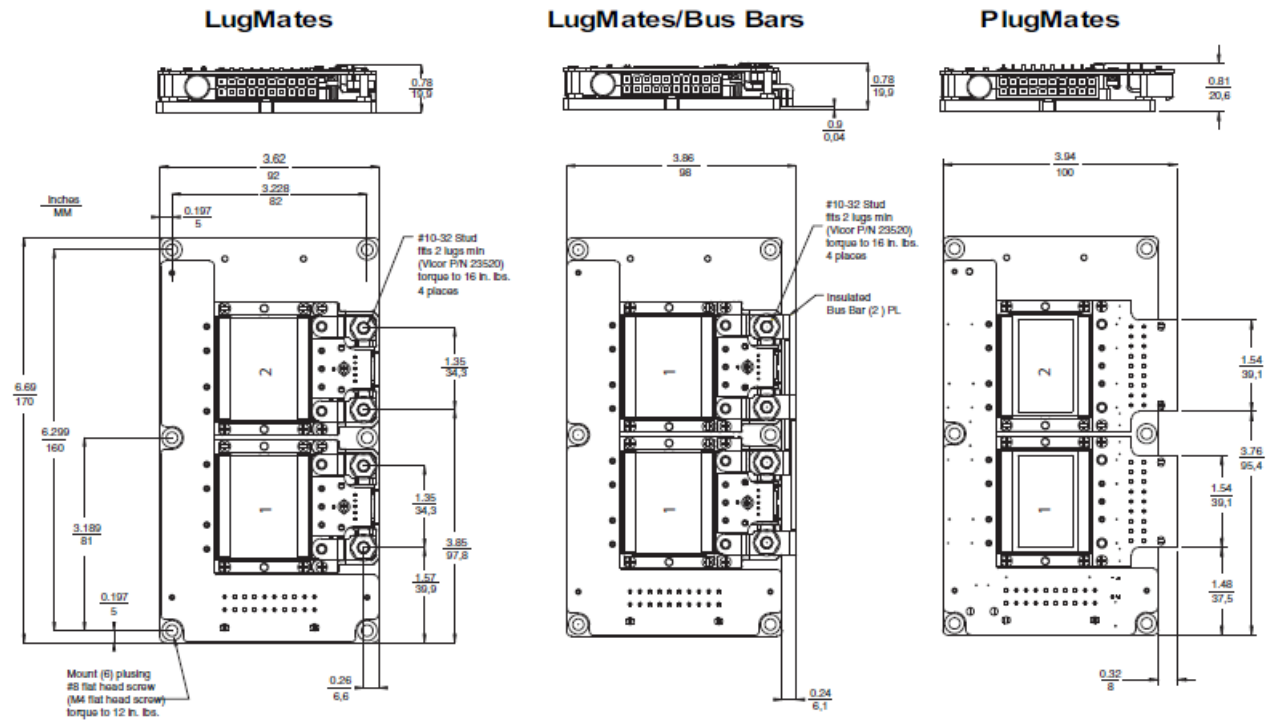
VIPAC Array mounted to cabinet wall with thermal compound between VIPAC Array and cabinet wall.



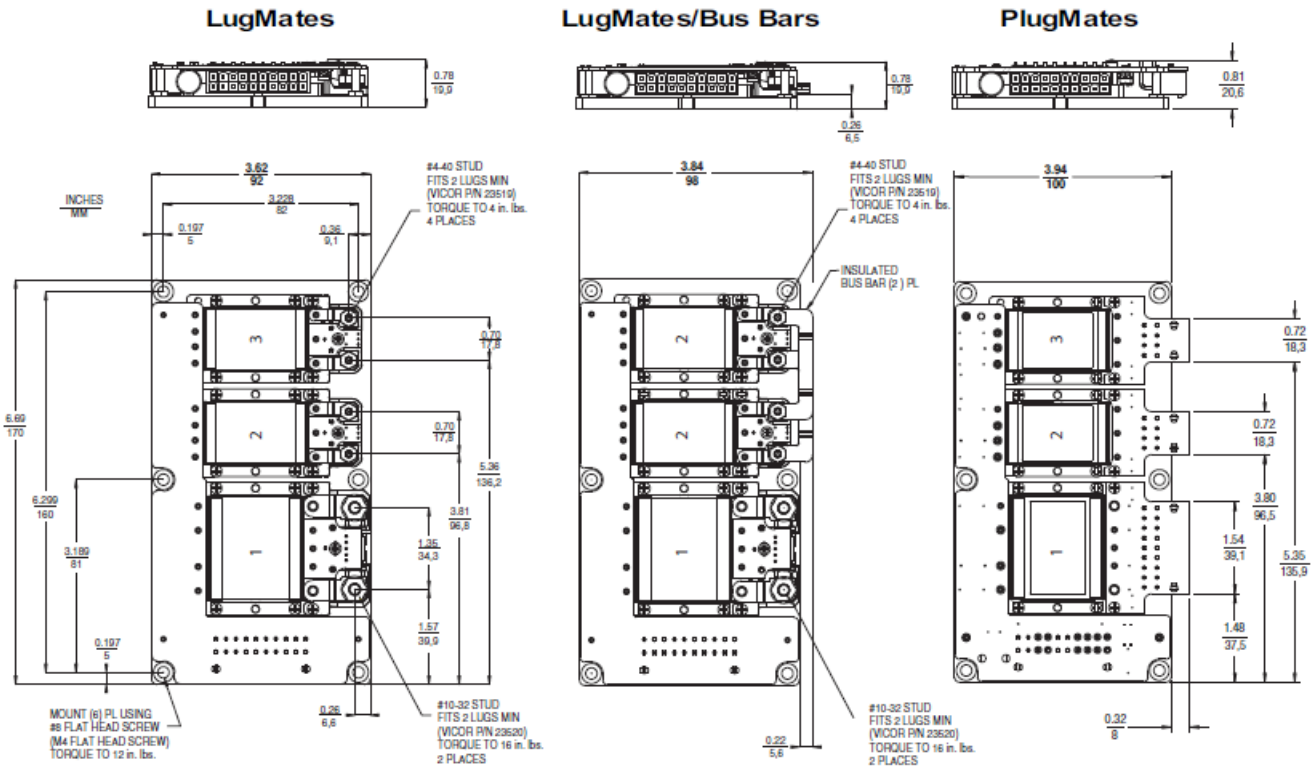
MECHANICAL DRAWINGS

Coldplate thickness is 0.19” ref for all configurations.

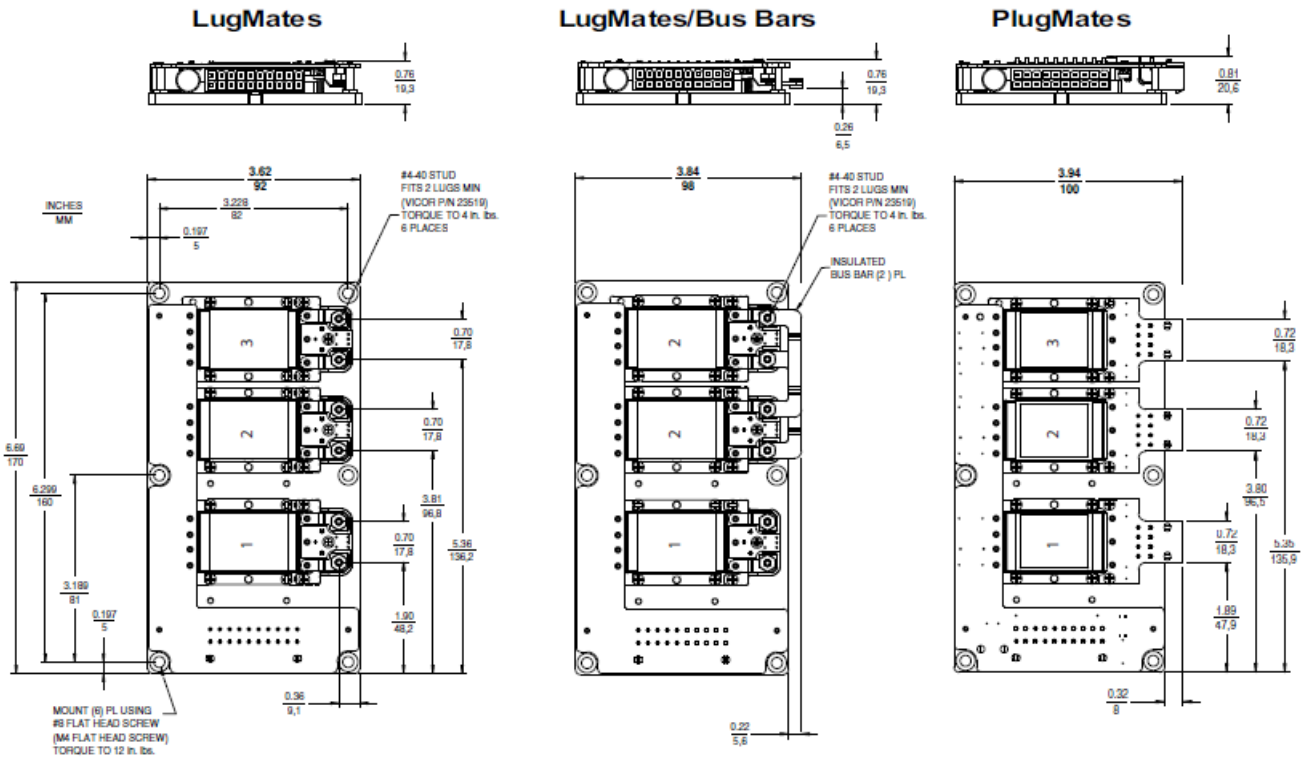
Configuration A



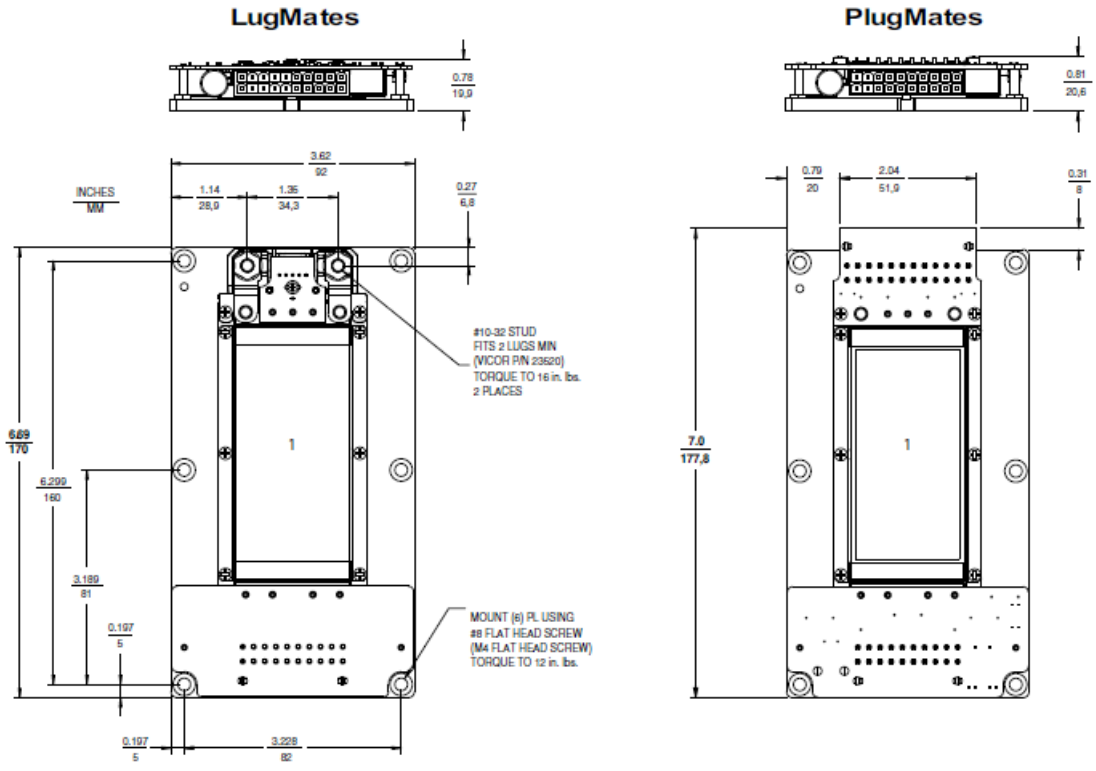
Configuration B



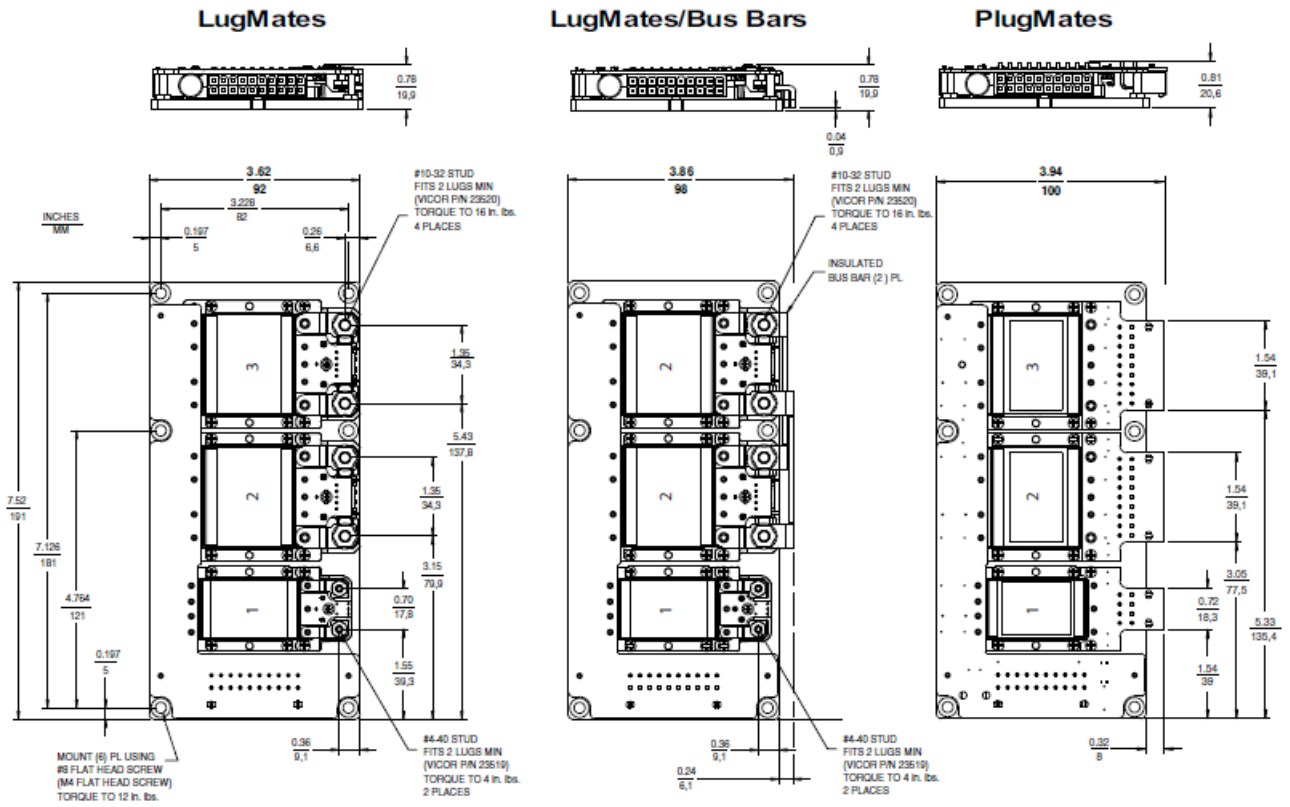
Configuration C



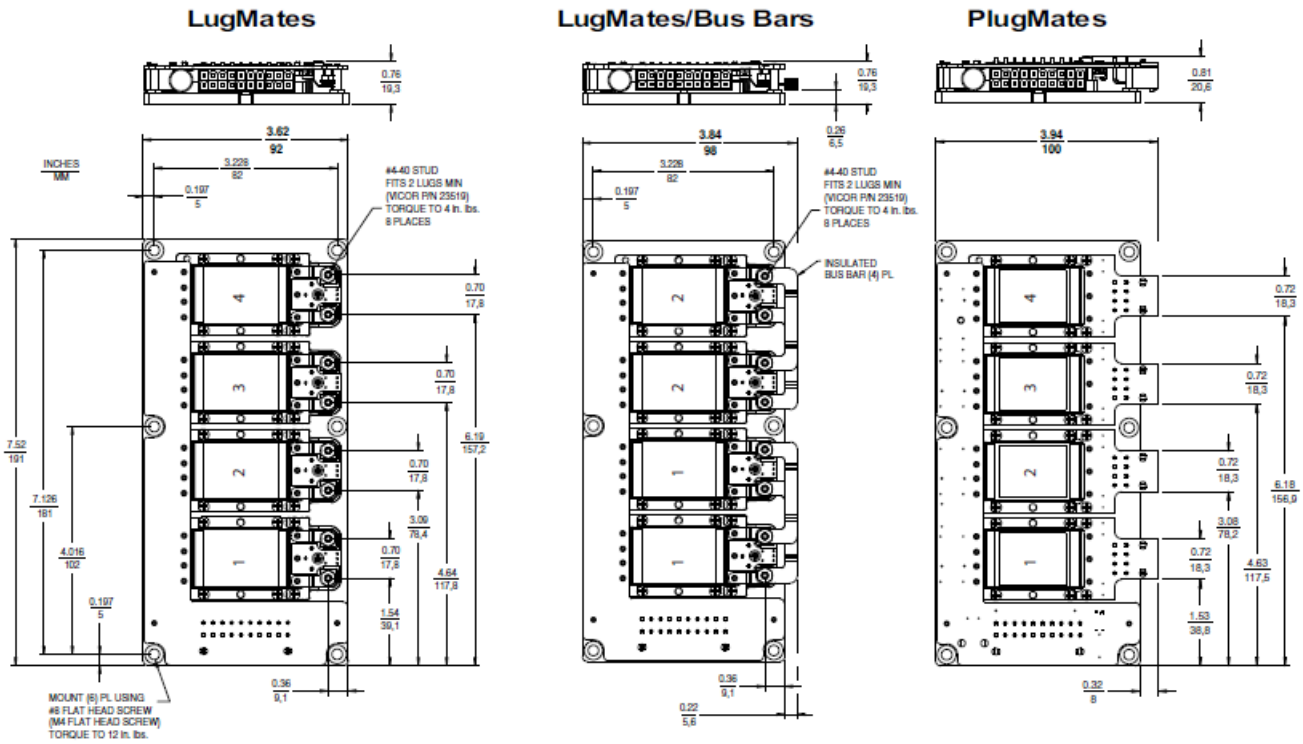
Configuration D and J



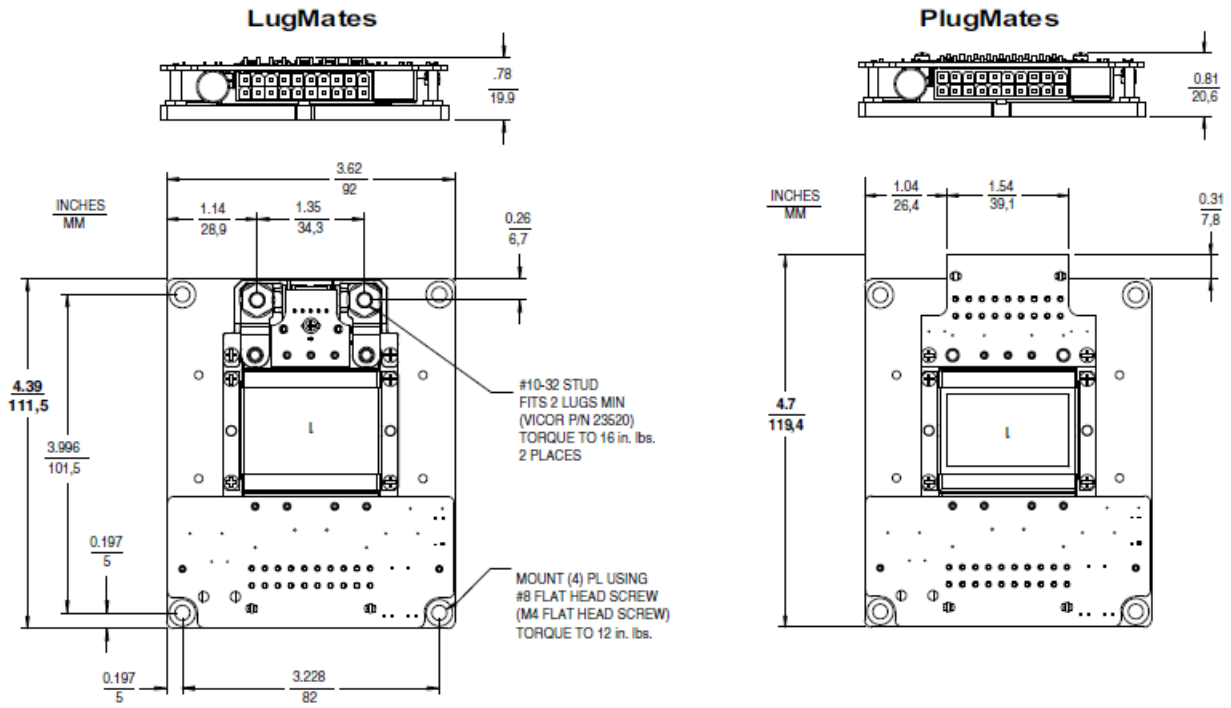
Configuration E



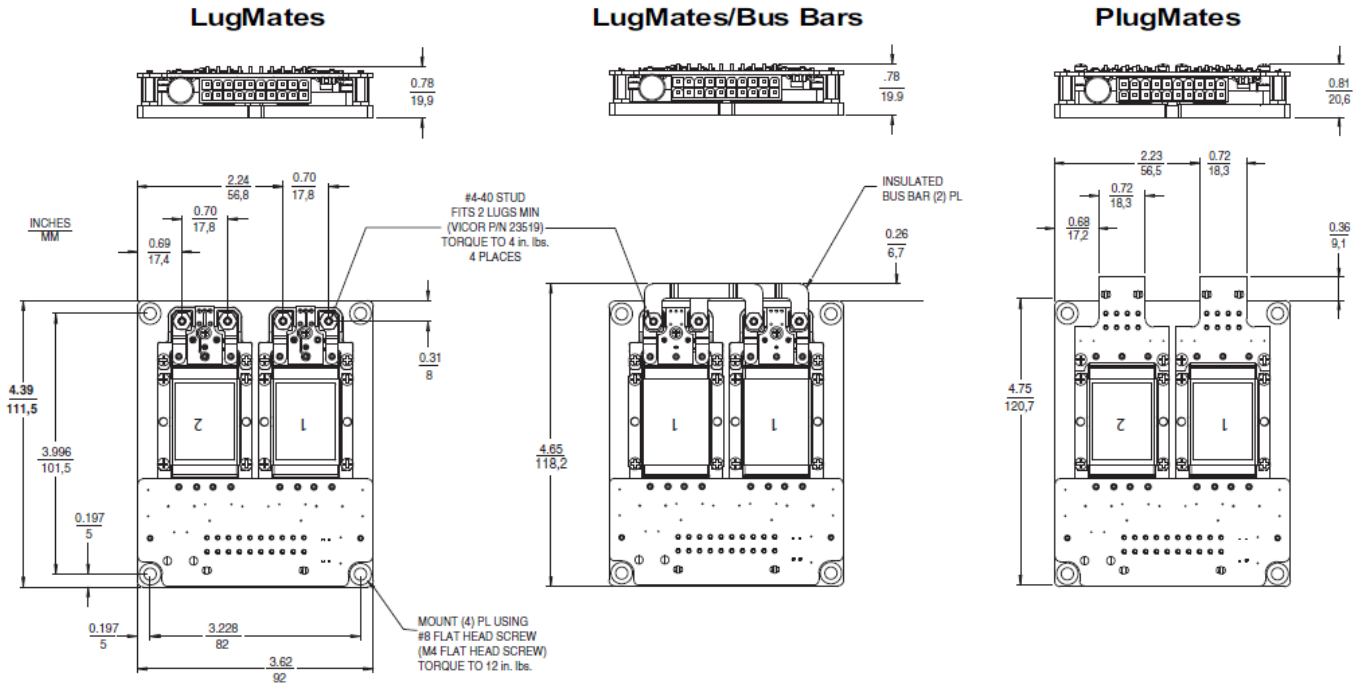
Configuration F



Configuration G and K



Configuration H



TECHNICAL SUPPORT CONTACTS

Vicor's Technical support team is staffed with Applications Engineers to provide the product and application information and technical assistance customers need concerning Vicor products and power solutions. Our facilities house electronics laboratories where Vicor Applications Engineers can evaluate specific customer design issues and offer a wide range of component-based power solutions that include distributed power, current sharing, N + 1 redundancy, thermal management, and compliance with safety and performance standards.

Applications engineers

- Answer technical questions (by phone, fax, email, or the Vicor website).

- Assist with component-based power system design.
- Support user needs through visits to Vicor and customer facilities.
- Help select the most appropriate product for your application.

If you have a specific technical question, call or email an Applications Engineer located at one of our global offices.

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For General Information

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Vicor Germany

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- **Ask the operator to connect you to** 800 735 6200

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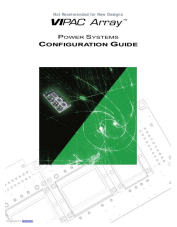
Documents / Resources

	VIPAC Array Chassis Mounted DC Converter [pdf] User Guide Chassis Mounted DC Converter, Mounted DC Converter, DC Converter, Converter

References

- User Manual