MegaPAC™ Family
AC-DC and DC-DC Switchers

WESTCOR

User and Field-Configurable Power Supplies

Overview

- **AC inputs available: 85 – 264 Vac, 208/240 Vac 3-Phase**
- **Power factor corrected (some models)**
- **Up to 4 kW**
- **DC inputs available: 100 – 380 Vdc**
- **User and field configurable**
- **Compact sizes as small as:** 3.4" x 6.0" x 9.5" (86,4 x 152,4 x 241,3 mm)
- **Fan cooled**
- **Efficiency >80%**
- **Up to 20 regulated outputs (up to 10 slots) from 1 to 95 Vdc and above**
- **Full power to 45°C on most products**
- **OVP, OTL, OCP on most outputs**
- **Autosense**
- **Power fail warning**
- **Sequencing and general shut down**
- **Agency approved cTÜVus, CE Marked**
- **Current Sharing**
- **Low leakage option available (some models)**

Description

The MegaPAC family of products offers four different versions of user configurability to meet almost any set of input and output requirements. Leveraging Vicor's modular DC-DC converters, MegaPAC family products combine feature-laden front ends with slide-in output assemblies called ConverterPACs.

User configurability is at the heart of every MegaPAC. A wide variety of the same length ConverterPACs can be installed, exchanged, or removed with the turn of just one screw. This means the MegaPAC can be reconfigured to meet evolving power requirements. Given its range of configurability, the MegaPAC is appropriate for virtually any application from prototype through production.

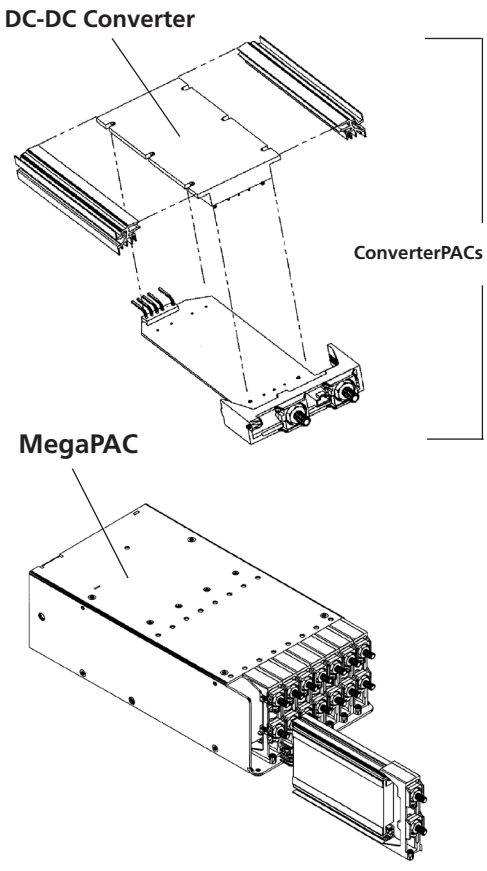
MegaPAC Family

Model	Dimensions	Input Voltage	Output Power	Number of Outputs	ConverterPACs per Slot
Mini MegaPAC	9.5" x 6.0" x 3.4" (241.3 x 152.4 x 86.4 mm)	90 to 132/ 180 to 264 Vac Strappable 260 to 380 Vdc	1,000 W @ 115 Vac or 230 Vac	1 to 10 (5 slots)	ModuPAC, JrPAC, DualPAC, RamPAC, BatPAC
PFC MegaPAC-EL/HPEL[a]	15.6" x 6.0" x 3.4" (396.2 x 152.4 x 86.4 mm)	85 to 264 Vac 100 to 380 Vdc	1,200 W @ 115 Vac 2,400 W @ 230 Vac	1 to 16 (8 slots)	QPAC, DualQPAC, JrQPAC, FinQPAC[b] FinQPAC requires 2 slots
PFC MegaPAC/HP	12.3" x 6.0" x 3.4" (312.4 x 152.4 x 86.4 mm)	85 to 264 Vac 100 to 380 Vdc	2,400 W @ 230 Vac 1,200 W @ 115 Vac	1 to 16 (8 slots)	ModuPAC, JrPAC, DualPAC, RamPAC, BatPAC, FinPAC[a] FinPACs require 2 slots
4kW MegaPAC	14.0" x 7.5" x 4.9" (355.6 x 190.5 x 124.5 mm)	208 or 240 Vac Three Phase 260 to 352 Vdc	4,000 W - 3 phase	1 to 20 (10 slots)	ModuPAC, JrPAC, DualPAC, RamPAC, BatPAC, UniPAC[b]

[a] Low noise ripple for EL power supplies is 10 mV p-p or 0.15% whichever is greater

[b] ConverterPACs with Maxi module

MegaPAC Configuration



DC-DC Converter

At the heart of every MegaPAC are Vicor zero-current switching, DC-DC converters. The modularity of the design combined with the breadth of the product line means virtually any output voltage can be provided.

ConverterPAC

ConverterPACs are the slide-in output assemblies that allow each MegaPAC to be easily configured to user-specified output requirements. Using the Vicor DC-DC converter, up to 600 W of output power can be provided per ConverterPAC. Larger power needs are easily handled by paralleling ConverterPACs.

MegaPAC

Each MegaPAC houses an array of user-selected ConverterPACs to provide a customized power supply. Using a different front end for each product line, almost any input power can be accommodated. The result is a customized power supply with off-the-shelf delivery.

MegaPAC Specifications (Typical at 25°C, nominal line and 75% load, unless otherwise speicified)

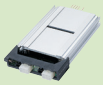
	PFC MegaPAC, PFC MegaPAC-HP PFC MegaPAC-HPEL, PFC MegaPAC-EL	Mini MegaPAC	4 kW MegaPAC
Input Characteristics			
Input	85 – 264 Vac	115 – 230 Vac, Strappable	208/240 Vac, 3 Φ, 4 wire 180-264 Vac, 1 Φ
Standard line	47 – 500 Hz		
Vantage line	47 – 63 Hz		
	100 – 380 Vdc	260 – 380 Vdc	260 – 352 Vdc
Line regulation	0.2% max. from 10% to full load		
Inrush current	25 A pk @ 115 Vac 25 A pk @ 230 Vac	80 A pk @ 115 & 230 Vac	30 A pk @ 230 Vac
Ride through time	>20 ms at nom. line, full load		
Power fail	>3 ms warning		
Conducted EMI (47 – 63 Hz)	EN 55022 Level B (certain configurations) FCC B	EN 55022 Level A	EN 55022 Level A
Power factor	0.99 (115 Vac) 0.98 (230 Vac)	0.65	0.92 (3 Φ operation)
Surge immunity (Common mode & normal mode)	EN 61000-4-5 Class 3, Performance Critera B		
Output Characteristics			
Load regulation	0.2% max. from 10% to full load; 0.5% from no load to 10% load		
Set point accuracy	Standard Line:1.0% for standard voltages, 2.0% for special or adjustable voltages Vantage Line: 2.0% for standard voltages, 5.0% for special or adjustable voltages See Vicor module specifications. A preload may be necessary for modules trimmed down below 90% of norm. output voltage.		
Ripple and noise (20 MHz BWL)	Std. outputs: 2% or 100 mV p-p max. whichever is greater, 10% min. load VXI options: 50 mV p-p max. for outputs, ≤15 Vdc; 150 mV p-p max. 15 V<V_{OUT} ≤24 V; 1% V_{OUT} >24 V 2nd Generation QPAC, FinPAC, FinQPAC, and UniPAC performance dependent on the converter module used. (Output of module is unfiltered.) QPAC, DualQPAC, JuniorQPAC, RamPAC: 10 mV p-p max. or 0.15%, whichever is greater.		
Overcurrent protection	105 –130% >5 V outputs 30 – 125% ≤5 V outputs		
Overvoltage protection	ModuPACs and QPACs: 115 – 135%		
Efficiency	80% typical	82% typical	82% typical
Output power	1,600 W @ 40°C (230 Vac) PFC MegaPAC; PFC MegaPAC-EL (Low Noise) 2,400 W @ 40°C (230 Vac) PFC MegaPAC HP and PFC MegaPAC HPEL 1,200 W @ 40°C (115Vac) PFC MegaPACs	1,000 W @ 45°C (115/230Vac)	4,000 W @ 45°C (3Φ); 1,500 W @ 45°C (1Φ);
Environmental			
Storage temperature	-40°C to +85°C		
Operating temperature[e]			
Vantage line full power	0 to +40°C	0 to +45°C	0 to +45°C
Vantage line half power	0 to +60°C	0 to +65°C	0 to +65°C
Standard line full power	-20 to +40°C	-20 to +45°C	-20 to +45°C
Standard line half power	-20 to +60°C	-20 to +65°C	-20 to +65°C
Safety approvals	**cTÜVus, CE Mark** Low Voltage Directive		
Product weights (fully configured)	9.75 lbs. (4,43 kg) (PFC MegaPAC & HP) 12.8 lbs. (5,8 kg) (PFC MegaPAC EL) 13.0 lbs. (6,0 kg) (PFC MegaPAC HPEL)	6.25 lbs. (2,84 kg)	22.0 lbs. (10 kg)
Limited warranty	2 Years		

[e] PFC MegaPACs: The maximum operating temperature is 40°C. If using a VI-200 with output voltage < 12 V and >150 W, the operating temperature decreases to 35°C. This also applies when using a FinPAC with output voltage <24V and > 500 W. Mini MegaPAC & 4 kW MegaPACs: The operating temperature is 45°C using any combination of modules and output volt ages as long as the front-end rating is not exceeded. Normal derating applies to half power if the ambient temperature is 20°C hotter.

ConverterPAC Overview

- Output voltages from 2 – 95 Vdc
- Output power up to 600 W
- DC OK
- Adjustment ranges from 50% to 110% of nominal
- Autosense/Remote Sense
- Low noise option: 10 mV p-p or 0.15%, whichever is greater
- 80 – 90% efficiency
- Current source outputs available

Modular ConverterPAC for MegaPAC Family Product

Converters	Module(s) Used	Maximum Output Power
VE-200 and VE-J00 ConverterPACs		
 **ModuPAC (M) (RoHS = GM)**	1 VE-200 DC-DC Converter	Up to 200 Watts per ConverterPAC
 **RamPAC (R) (RoHS - GR)**	1 VE-J00 DC-DC Converter 1 Ripple Attenuator Module (VI-RAM)	Up to 100 Watts for applications requiring low ripple/noise
 **DualPAC (D) (RoHS - GD)**	2 VI-J00 DC-DC Converters	Dual Output; Up to 100 Watts each output
 **JuniorPAC (J) (RoHS - GJ)**	1 VI-J00 DC-DC Converter	Up to 100 Watts
 **BatPAC (B) (RoHS - GB)**	1 VI-200 BatMod	A 200 W programmable current source that can be configured as a battery charger
 **QPAC [c] Low Noise (L) (RoHS - GL)**	1 VI-200 DC-DC Converter with differential and common mode filters	Up to 200 Watts for applications requiring as low as 10 mVp-p output noise
 **JrQPAC [c] Low Noise (LJ) (RoHS - GLJ)**	1 VE-J00 DC-DC Converter with differential and common mode filters	Up to 100 W
 **DualQPAC [c] Low Noise (LD) (RoHS - GLD)**	2 VI-J00 DC-DC Converters with differential and common mode filter	Dual Output; Up to 100 Watts each output
Maxi ConverterPACs		
 **UniPAC (XU) (RoHS - GXU)**	1 Maxi DC-DC Converter	Up to 500 Watts; Applicable for 3-phase / 4 kW product
 **FinPAC [d] (PZ) (RoHS - GPZ)**	1 Maxi DC-DC Converter	Up to 600 Watts; Applicable for PFC MegaPAC High Power
 **FinQPAC [d] (PZL) (RoHS - GPL)**	1 Maxi DC-DC Converter with discrete output filter	Up to 600 Watts; Applicable for PFC MegaPAC-HPEL

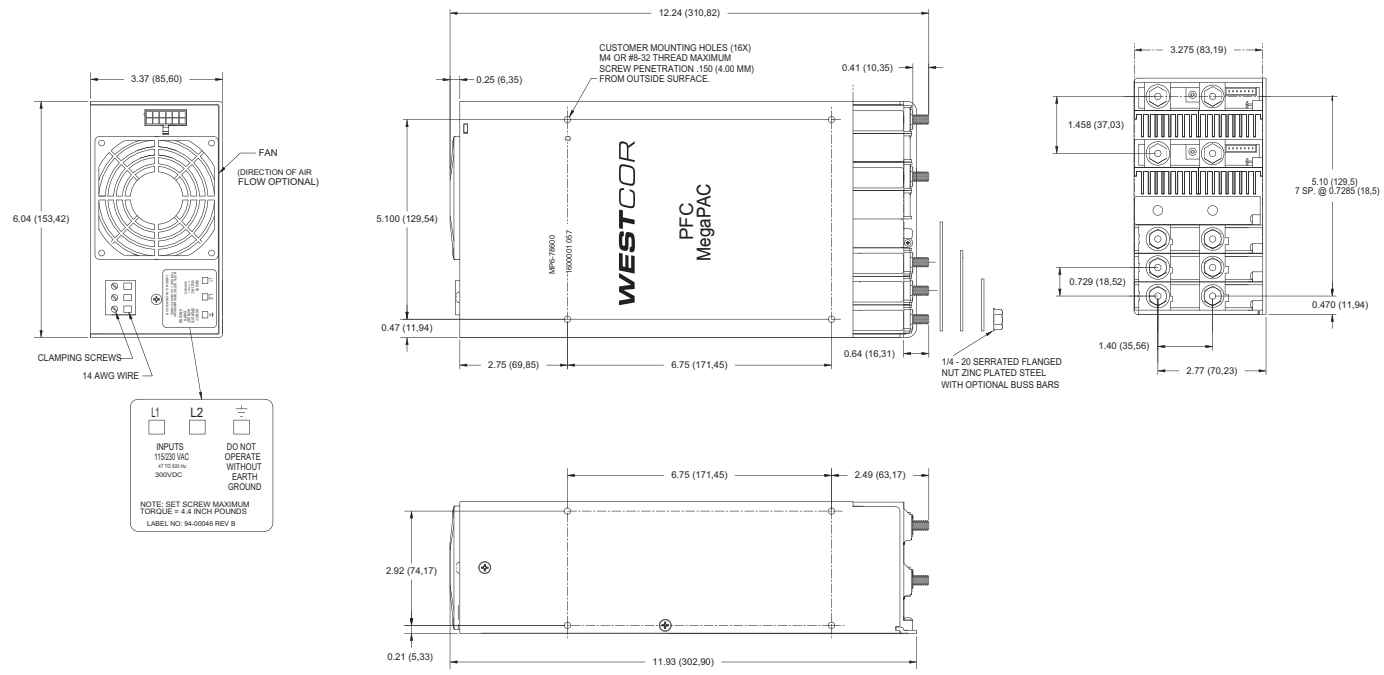
[c] Only for the extended length MegaPACs

[d] FinPACs and FinQPACs require two (2) slots

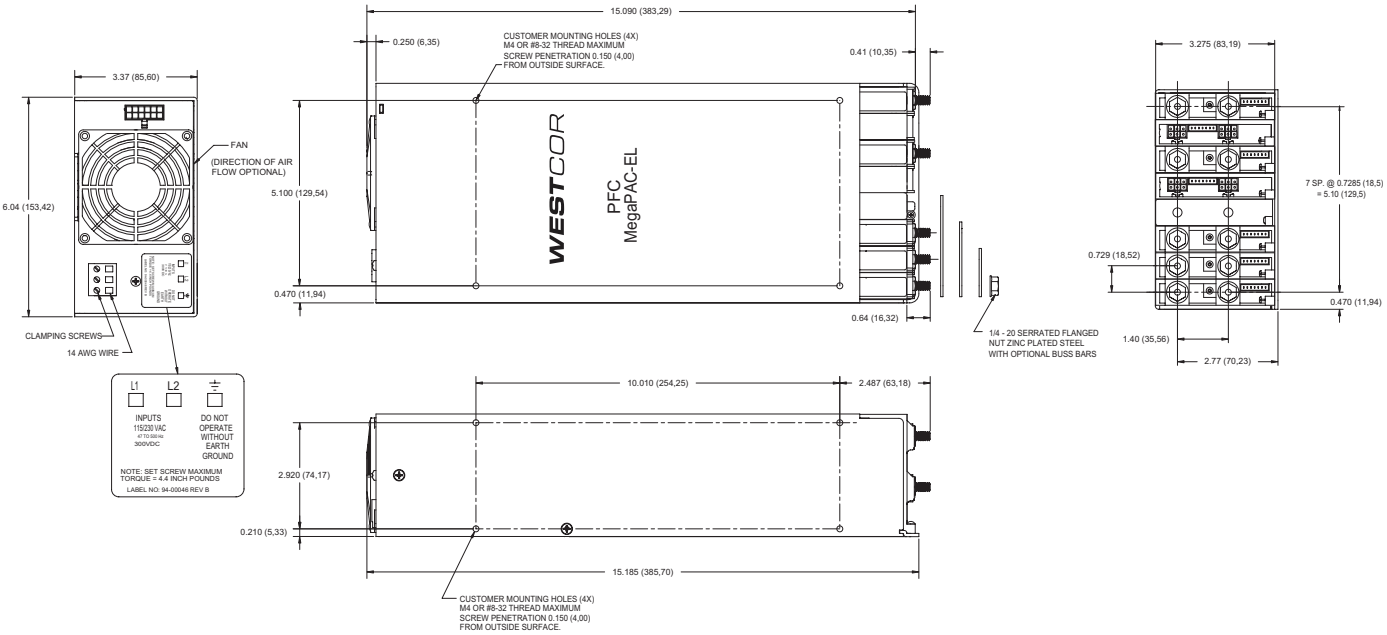
MegaPAC Mechanical Drawings

Note: Newer power supplies have redesigned output studs which are 1/8th inch longer. Design guides available online at vicorpower.com for more details.

PFC MegaPAC / PFC MegaPAC-High Power



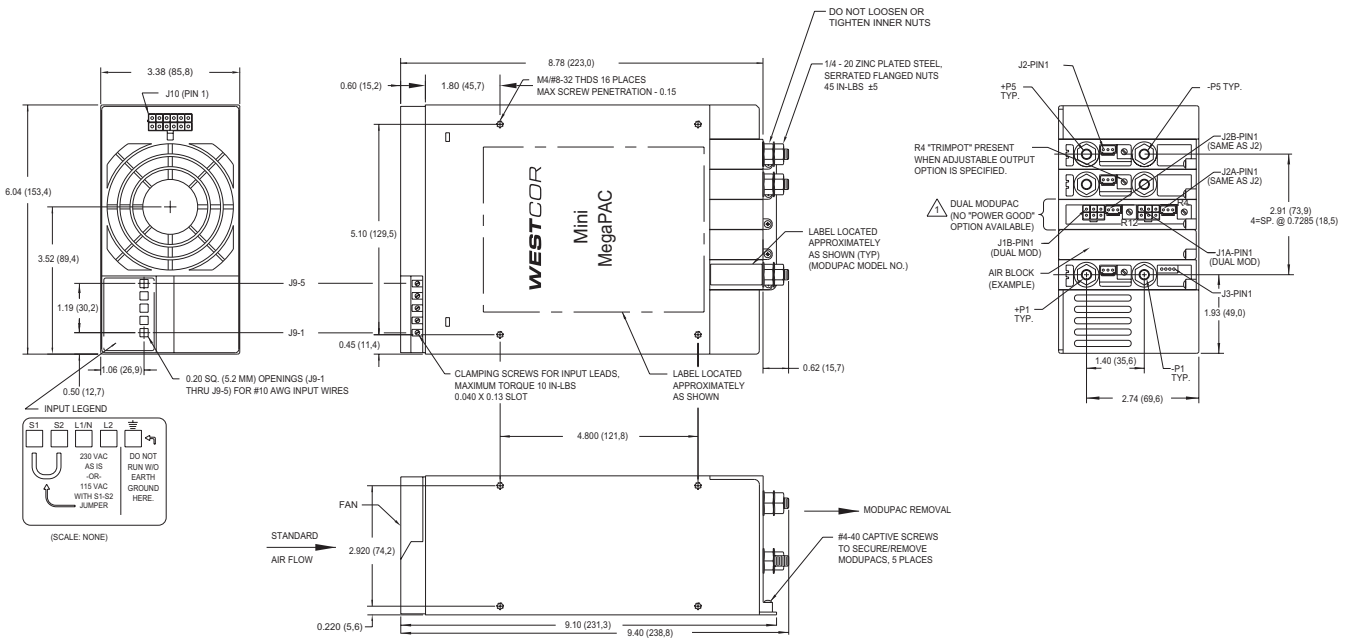
PFC MegaPAC-EL (Low Noise)



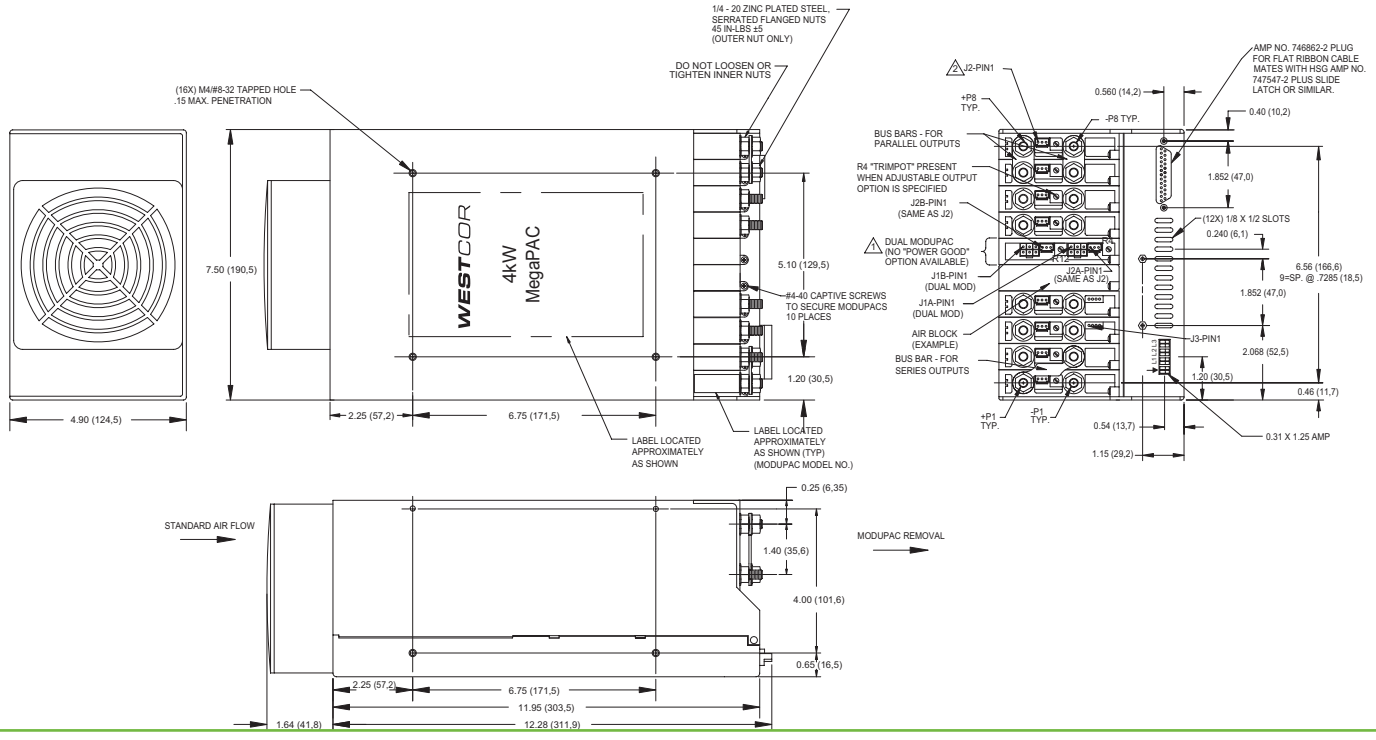
MegaPAC Mechanical Drawings

Note: Newer power supplies have redesigned output studs which are 1/8th inch longer. Design guides available online at vicorpower.com for more details.

Mini MegaPAC



4 kW MegaPAC



Connection Diagrams

Connection Diagrams, Input

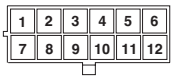
PFC MegaPAC/PFC MegaPAC-High Power/ PFC MegaPAC-EL/PFC MegaPAC-HPEL

INPUT CONNECTIONS
J9

J10 Interface

J10-1	E/D-1
J10-2	E/D-2
J10-3	E/D-3
J10-4	E/D-4
J10-5	E/D-5
J10-6	E/D-6
J10-7	E/D-7
J10-8	E/D-8
J10-9	Vcc +5V, 0.3A
J10-10	Signal Ground
J10-11	AC Power OK
J10-12	General Shutdown

J10



Housing-Molex P/N: 39-01-2120
Terminal-Molex P/N: 39-00-0039
Crimp Tool-Molex P/N: 11-01-0197

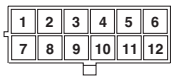
Mini MegaPAC

INPUT CONNECTIONS
J9

J10 Interface

J10-1	E/D-1
J10-2	E/D-2
J10-3	E/D-3
J10-4	E/D-4
J10-5	E/D-5
J10-6	N/C
J10-7	N/C
J10-8	N/C
J10-9	Vcc +5V, 0.3A
J10-10	Signal Ground
J10-11	AC Power OK
J10-12	General Shutdown

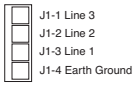
J10



Molex header Mini-fit Jr. 12 POS #39-30-1120
Customer I/O interface mating receptacle
Molex #39-01-2120with terminal #39-00-0039
and 18-24 AWG str anded wire.
Use Molex tool #11-01-0197

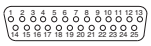
4 kW MegaPAC

INPUT CONNECTIONS
J1



J10 Interface

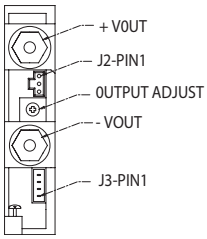
1 Signal Ground	14 Phase Fail Warning
2 Signal Ground	15 Signal Ground
3 Overtemp. Warning	16 Vcc +5 volt, 300 mA
4 Analog Temperature	17 Vcc +5 volt, 300 mA
5 General Shutdown	18 AC Power OK
6 No Connection	19 AC Power Fail
7 Enable/Disable #10	20 Enable/Disable #9
8 Enable/Disable #8	21 Enable/Disable #7
9 Enable/Disable #6	22 Enable/Disable #5
10 Enable/Disable #4	23 Enable/Disable #3
11 Enable/Disable #2	24 Enable/Disable #1
12 Signal Ground	25 Gate Out Slot #10 (isolated)
13 Gate In Slot #1 (isolated)	



Amp 25 pin connector #841-17-DBFR-DA25P plug for flat ribbon cable. Mates with housing ADAM TECH #DB25-SR-SL and contacts #DCS-01B plus slide latch #HDW-043-25.

Connection Diagrams, Output

ModuPAC, JuniorPAC, RamPAC



J2 (REMOTE SENSE)

1	TRIM PIN ACCESS
2	+ SENSE
3	- SENSE

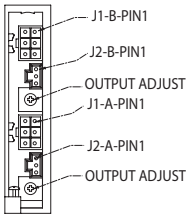
J3 DC OK (POWER GOOD)

4	Vcc IN
3	POWER GOOD
2	POWER GOOD INVERTED
1	SIGNAL GROUND

MATING HARDWARE
HOUSING- MOLEX P/N: 50-57-9403
TERMINALS- MOLEX P/N: 16-02-0103
CRIMP TOOL MOLEX P/N: 63811-8700

MATING HARDWARE
HOUSING- MOLEX P/N: 50-37-5043
TERMINALS- MOLEX P/N: 08-70-1040
CRIMP TOOL MOLEX P/N: 63811-5200

DualPAC



J1 (OUTPUT CONNECTORS)

4 1	1 AND 4 +V OUT
5 2	2 AND 5 -V OUT
6 3	3 +R/SENSE 6 -R/SENSE

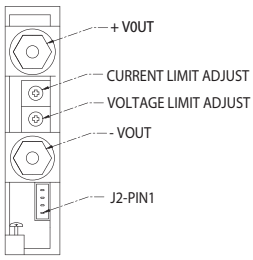
J2 (REMOTE SENSE)

1	TRIM PIN ACCESS
2	+ SENSE
3	- SENSE

MATING HARDWARE
HOUSING- MOLEX P/N: 39-01-2060
TERMINALS- MOLEX P/N: 39-00-0039
CRIMP TOOL MOLEX P/N: 11-01-0197

MATING HARDWARE
HOUSING- MOLEX P/N: 50-57-9403
TERMINALS- MOLEX P/N: 16-02-0103
CRIMP TOOL MOLEX P/N: 11-01-0208

BatPAC

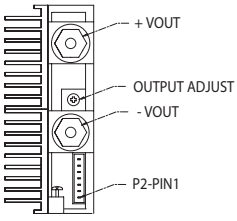


J2 (BATPAC REMOTE INTERFACE)

4	CURRENT LIMIT ADJUST
3	VOLTAGE LIMIT ADJUST
2	CURRENT MONITOR
1	- VOUT

MATING HARDWARE
HOUSING- MOLEX P/N: 50-37-5043
TERMINALS- MOLEX P/N: 08-70-1040
CRIMP TOOL MOLEX P/N: 63811-5200

FinPAC



P2 REMOTE SENSE T RIM/SC & POWER GOOD

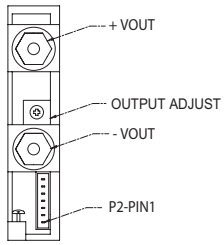
7	+SENSE
6	-SENSE
5	TRIM
4	Vcc IN
3	POWER GOOD
2	POWER GOOD INVERTED
1	SIGNAL GROUND

MATING HARDWARE
HOUSING- MOLEX P/N: 50-37-5073
TERMINALS- MOLEX P/N: 08-70-1040
CRIMP TOOL MOLEX P/N: 63811-5200

Connections Diagrams (continued)

Connection Diagrams, Output (Continued)

QPAC, JuniorQPAC

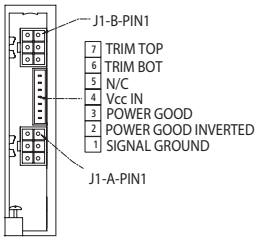


P2 REMOTE SENSE TRIM/SC & POWER GOOD

7	+SENSE
6	-SENSE
5	TRIM
4	Vcc IN
3	POWER GOOD
2	POWER GOOD INVERTED
1	SIGNAL GROUND

MATING HARDWARE
HOUSING- MOLEX P/N: 50-37-5073
TERMINALS- MOLEX P/N: 08-70-1040
CRIMP TOOL MOLEX P/N: 63811-5200

DualQPAC



7	TRIM TOP
6	TRIM BOT
5	N/C
4	Vcc IN
3	POWER GOOD
2	POWER GOOD INVERTED
1	SIGNAL GROUND

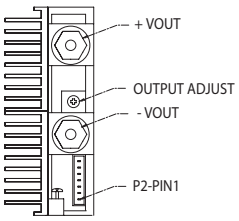
J1-B (OUTPUT CONNECTORS) **MATING HARDWARE**

4	1	1 AND 4 +V OUT	HOUSING- MOLEX P/N: 39-01-2060
5	2	2 AND 5 -V OUT	TERMINALS- MOLEX P/N: 39-00-0039
6	3	3 +R/SENSE 6 -R/SENSE	CRIMP TOOL MOLEX P/N: 11-01-0197

J1-A (OUTPUT CONNECTORS) **MATING HARDWARE**

4	1	1 AND 4 +V OUT	HOUSING- MOLEX P/N: 39-01-2060
5	2	2 AND 5 -V OUT	TERMINALS- MOLEX P/N: 39-00-0039
6	3	3 +R/SENSE 6 -R/SENSE	CRIMP TOOL MOLEX P/N: 11-01-0197

FinQPAC



P2 REMOTE SENSE T RIM/SC & POWER GOOD

7	+SENSE
6	-SENSE
5	TRIM
4	Vcc IN
3	POWER GOOD
2	POWER GOOD INVERTED
1	SIGNAL GROUND

MATING HARDWARE
HOUSING- MOLEX P/N: 50-37-5073
TERMINALS- MOLEX P/N: 08-70-1040
CRIMP TOOL MOLEX P/N: 63811-5200

ConverterPAC Options

	ModuPAC (M)	BatPAC (B)	DualPAC (D)	Junior PAC (J)	RamPAC (R)	DualQPAC (LD)	QPAC (L)	Junior QPAC (LJ)	UniPAC (XU)	FinPAC (PZ)[f]	FinQPAC (PLZ)[f]
Option											
D Power Good	OPT	NA	NA	OPT	OPT[i]	OPT[i]	OPT	OPT	OPT	OPT	OPT
T Trim: +10%/-10%	OPT[g]	NA	OPT	OPT[g]	OPT[g]	NA	OPT[g]	OPT	OPT	OPT	OPT
F Trim: +10%/-50%	OPT[g]	NA	OPT	OPT[g]	OPT[g]	NA	OPT[g]	OPT	OPT	OPT	OPT
V1 VXI Low Noise (150 mV p-p 15 V <Vout ≤24 V	OPT	NA	OPT	OPT	NA[h]	NA[h]	NA[h]	NA[h]	NA	NA	NA[h]
V2 VXI Low Noise (50 mV p-p ≤15 V)	OPT	NA	OPT	OPT	NA	NA	NA	NA	NA	NA	NA
V3 VXI Low Noise (1% Vout >24)	OPT	NA	OPT	OPT	NA	NA	NA	NA	NA	NA	NA
Parallelable	STD	STD	NA	NA	NA	NA	STD	NA	STD	STD	STD
Autosense	STD	NA	STD	STD	NA	STD	STD	STD	STD	STD	STD

[f] FinPACs and FinQPACs require two slots
[g] Module dependent, 3.3 V, 10 – 15 V "T" option only
[h] All QPACs and RamPACs have output ripple of 10mV p-p or 0.15% whichever is greater
[i] Per slot based indicator

WARRANTY

Vicor products are guaranteed for two years from date of shipment against defects in material or workmanship when in normal use and service. This warranty does not extend to products subjected to misuse, accident, or improper application or maintenance. Vicor shall not be liable for collateral or consequential damage. This warranty is extended to the original purchaser only.

EXCEPT FOR THE FOREGOING EXPRESS WARRANTY, VICOR MAKES NO WARRANTY, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Vicor will repair or replace defective products in accordance with its own best judgement. For service under this warranty, the buyer must contact Vicor to obtain a Return Material Authorization (RMA) number and shipping instructions. Products returned without prior authorization will be returned to the buyer. The buyer will pay all charges incurred in returning the product to the factory. Vicor will pay all reshipment charges, if the product was defective, within the terms of this warranty.

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Vicor is an Equal Opportunity/Affirmative Action Employer.

Vicor's comprehensive line of power solutions includes high density AC-DC and DC-DC modules and accessory components, fully configurable AC-DC and DC-DC power supplies, and complete custom power systems.

Information furnished by Vicor is believed to be accurate and reliable. However, no responsibility is assumed by Vicor for its use. Vicor components are not designed to be used in applications, such as life support systems, wherein a failure or malfunction could result in injury or death. All sales are subject to Vicor's Terms and Conditions of Sale, which are available upon request.

Specifications are subject to change without notice.

The latest data is available on the Vicor web site at vicorpower.com.

Westcor, a division of Vicor, designs and builds medium to high power configurable power supplies incorporating Vicor's high density DC-DC converters and accessory components. Westcor's product line includes:

- PFC Mini
- PFC Micro
- PFC MicroS
- Mini MegaPAC
- PFC MegaPAC
- PFC MegaPAC (High Power)
- PFC MegaPAC-EL (Low Noise)
- 4 kW MegaPAC
- ConverterPACs
- FlatPAC-EN

See Design Guides for detailed information about all MegaPAC products. They can be downloaded in PDF format from the website at www.vicorpower.com.