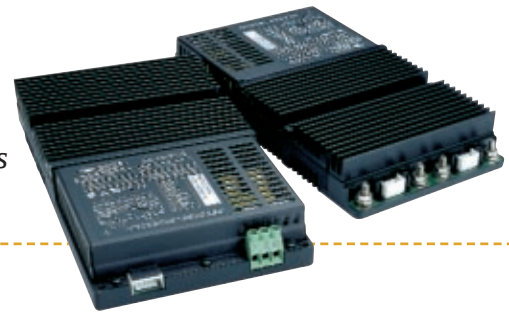


FlatPAC™

50 to 600W
Autoranging
AC-DC Switchers



Product Highlights

If you're looking for the convenience of a complete, low profile, agency-approved switching power supply, look no further. The FlatPAC combines Vicor's workhorse VI-200 family of DC-DC converters with a modular package and front end subassembly to provide from 50 to 600W of output power from one to three outputs.

A flat plate heatsink for use in conduction cooled applications may be specified as an alternate to the standard finned version by adding "CC" to the end of the model number.

Vicor's FlatPAC is also available with a current controlled output using BatMod converter modules of 12, 24, or 48Vdc outputs. This option is specified by appending "BM" or "BC" (for conduction cooled versions) to the end of the FlatPAC model number.

The FlatPAC's contemporary design allows us to configure your order quickly and provide rapid turnaround on standard models. It is truly a complete power solution, enabling you to spend more time designing your system and less time worrying about how to power it.

Features

- Microcontroller architecture
- Inputs: 115/230Vac autoranging
- Meets FCC Part 15, EN55022, Class B conducted emissions
- 80-90% efficiency
- Any output: 1 to 95Vdc
- Module enable/disable (except LU series)
- UL, CSA, TÜV, VDE, BABT, CE marked
- Remote sense and current limit
- BUS OK and AC OK (except LU series)
- 40mS ride-through time
- OVP and thermal shutdown
- 1 output; up to 200W
- 1 or 2 outputs; up to 400W
- 1, 2, or 3 outputs; up to 600W

FlatPAC Configuration Chart

Typical Model: VI - RU 0 1 1 - E U U U - :: ::

Input: 115/230Vac; Output 1: 5Vdc at 200W
Output 2: 12Vdc at 200W
Output 3: 12Vdc at 200W

	Total Power	Part No.	# of Converters	Dimensions
Single Outputs:				
50-200W	VI-LU	0 1 1 - E U U U	1	9.25" x 2.5" x 1.37" (234,8 x 63,5 x 34,8mm)
200-400W	VI-MU	0 1 1 - E U U U	2	9.25" x 4.9" x 1.37" (234,8 x 124,5 x 34,8mm)
300-600W	VI-NU	0 1 1 - E U U U	3	9.25" x 7.3" x 1.37" (234,8 x 185,4 x 34,8mm)
Dual Outputs:				
100-400W	VI-PU	0 1 1 - E U U U	2	9.25" x 4.9" x 1.37" (234,8 x 124,5 x 34,8mm)
150-600W	VI-QU	0 1 1 - E U U U	3	9.25" x 7.3" x 1.37" (234,8 x 185,4 x 34,8mm)
Triple Outputs:				
150-600W	VI-RU	0 1 1 - E U U U	3	9.25" x 7.3" x 1.37" (234,8 x 185,4 x 34,8mm)

Input Characteristics

90-132/180-264Vac
U = Autoranging

Output Power

$V_{out} \geq 5V$	$V_{out} < 5V$
W = 100W	W = 20A
V = 150W	V = 30A
U = 200W	U = 40A
S = 300W	S = 60A
Q = 400W	Q = 80A

Output Voltage

Z 2V	M 10V	K 40V
Y 3.3V	1 12V	4 48V
0 5V	P 13.8V	H 52V
X 5.2V	2 15V	F 72V
W 5.5V	N 18.5V	D 85V
V 5.8V	3 24V	B 95V
T 6.5V	L 28V	
R 7.5V	J 36V	

Product Grade

E = 0°C to +85°C Case
C = 0°C to +85°C Case
I = -30°C to +85°C Case

Output Power/Current

$V_{out} \geq 5V$	$V_{out} < 5V$
Y = 50W	Y = 10A
X = 75W	X = 15A
W = 100W	W = 20A
V = 150W	V = 30A
U = 200W	U = 40A

Output Power/Current

$V_{out} \geq 5V$	$V_{out} < 5V$
S = 300W	S = 60A
P = 450W	P = 90A
M = 600W	M = 120A

Options

BC = BatMod/Conduction Cooled
BM = BatMod
CC = Conduction Cooled

FlatPAC Specifications

(Typical at 25°C, nominal line and 75% load, unless otherwise specified.)

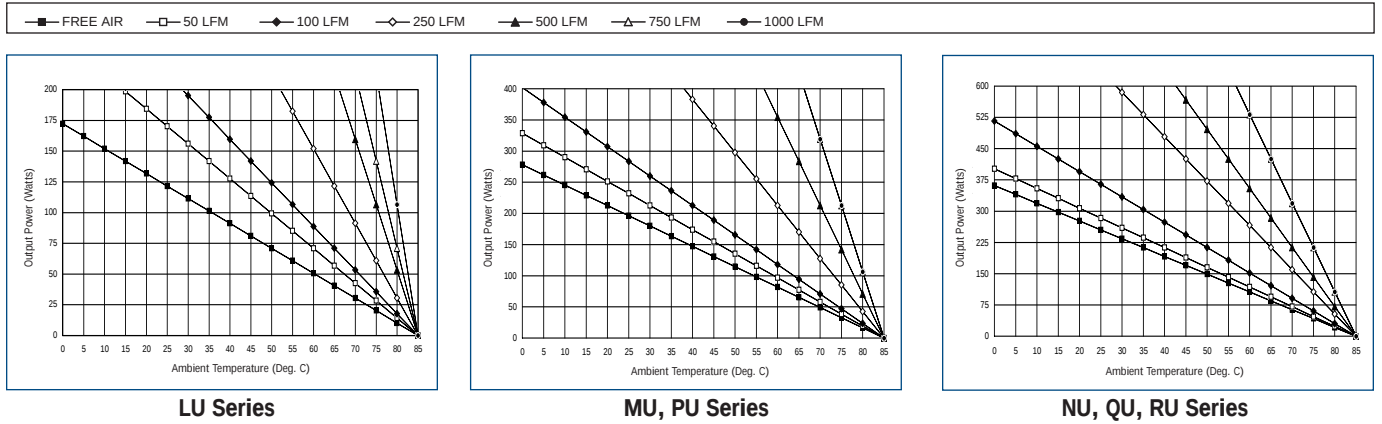
Input Characteristics								
AC line input								
Autoranging								
Line frequency								
Inrush current								
115Vac operation								
230Vac operation								
Ride-through time (full load)								
90/180Vac low line								
115/230Vac nominal line								
AC fail warning time								
AC and BUS OK (2 converter and 3 converter models only)								
Off state								
On state								
Module disable (2 converter and 3 converter models only, optically isolated LED input)								
Continuous forward current								
Forward voltage								
Dielectric withstand								
Primary to chassis GND								
Primary to secondary								
Secondary to chassis GND								
Output Characteristics (applies to each output individually)								
	E-Grade			C-, I-Grade			UNITS	NOTES
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX		
Setpoint accuracy		1%	2%		0.5%	1%	V _{NOM}	
Load/line regulation			0.5%		0.05%	0.2%	V _{NOM}	LL to HL, 10% to Full Load
Load/line regulation			1%		0.2%	0.5%	V _{NOM}	LL to HL, No Load to full load
Output temperature drift		0.02			0.01	0.02	%/°C	Over rated temperature
Long term drift		0.02			0.02		%/1k hours	
Output ripple								
2V			150mV		60mV	100mV	p-p	20MHz bandwidth
5V			5%		2%	3%	p-p	20MHz bandwidth
10-48V			3%		0.75%	1.5%	p-p	20MHz bandwidth
Output voltage trimming ¹	50%		110%	50%		110%		
Total remote sense compensation	0.5			0.5			Volts	0.25V max. neg. leg
OVP setpoint		125%		115%	125%	135%	V _{NOM}	Recycle power
Current limit	105%		135%	105%		125%	I _{NOM}	Automatic restart
Short circuit current ²	20%		140%	20%		130%	I _{NOM}	
Thermal Characteristics								
Efficiency		78-88%			80-90%			
Shutdown temp. — case	90	95	105	90	95	105	°C	Cool and recycle power to restart
Operating temp. — case			85			85	°C	See Thermal Curves
Mechanical Specifications								
Weight ³		22.4 (652)			22.4 (652)		Ounces (Grams)	
Safety Agency Approvals								
UL, CSA, TÜV, VDE, IEC 950, CE Marked for low voltage directive, 73/23/EEC								
Environmental Characteristics/Product Grade Designators								
Storage temperature	-20°C to +100°C (C-grade and E-grade)							
	-55°C to +100°C (I-grade)							
Operating temperature (case)	0°C to +85°C (C-grade and E-grade)							
	-30°C to +85°C (I-grade)							
EMI / EMC Characteristics (Performed on selected samples representative of the U Series FlatPac product family.)								
Conducted emissions, LISN	EN 55022 and FCC R&R, Part 15, Subpart B, Class B							
Electrostatic discharge	IEC 801-2, 1991, Level 4; ±8kV Contact, ± 15kV Air Discharge							
RF radiated immunity, E-field	IEC 801-3, 1984; 27MHz to 500MHz, 3 V/M, CW							
Electrical fast transients/burst	EN 61000-4-4, Level 2; ±1kV,							
Surge immunity	EN 61000-4-5, Class 3; ±2kV Line to Ground, ±1kV Line to Line							

¹10, 12V and 15V outputs, trim range ±10%. Consult factory for wider trim range.

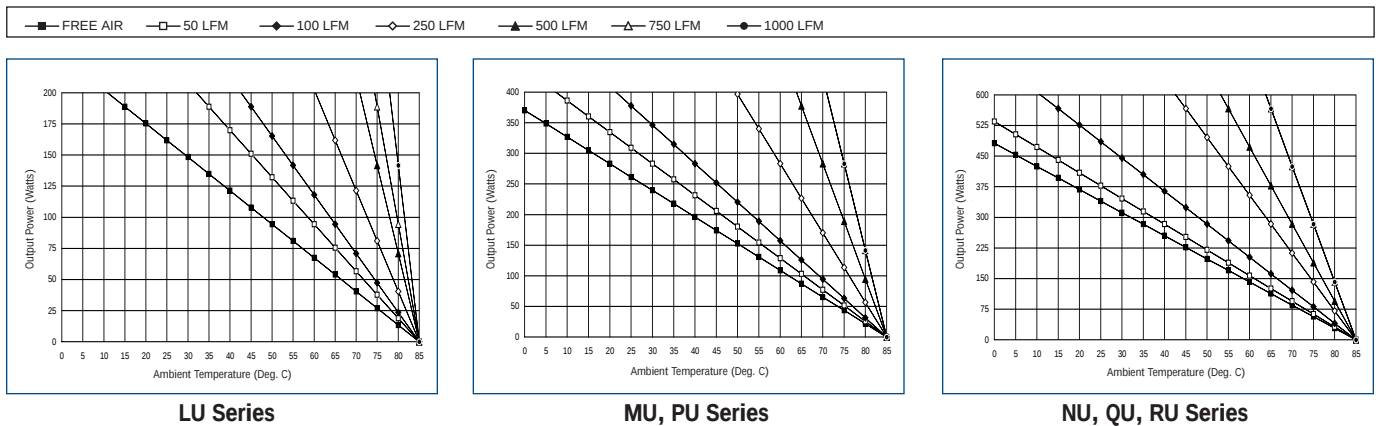
²Output voltages of 5V or less incorporate foldback current limiting, greater than 5V incorporate straight line current limiting.

³For MU, PU series, multiply value by 2; for NU, QU, RU series, multiply value by 3.

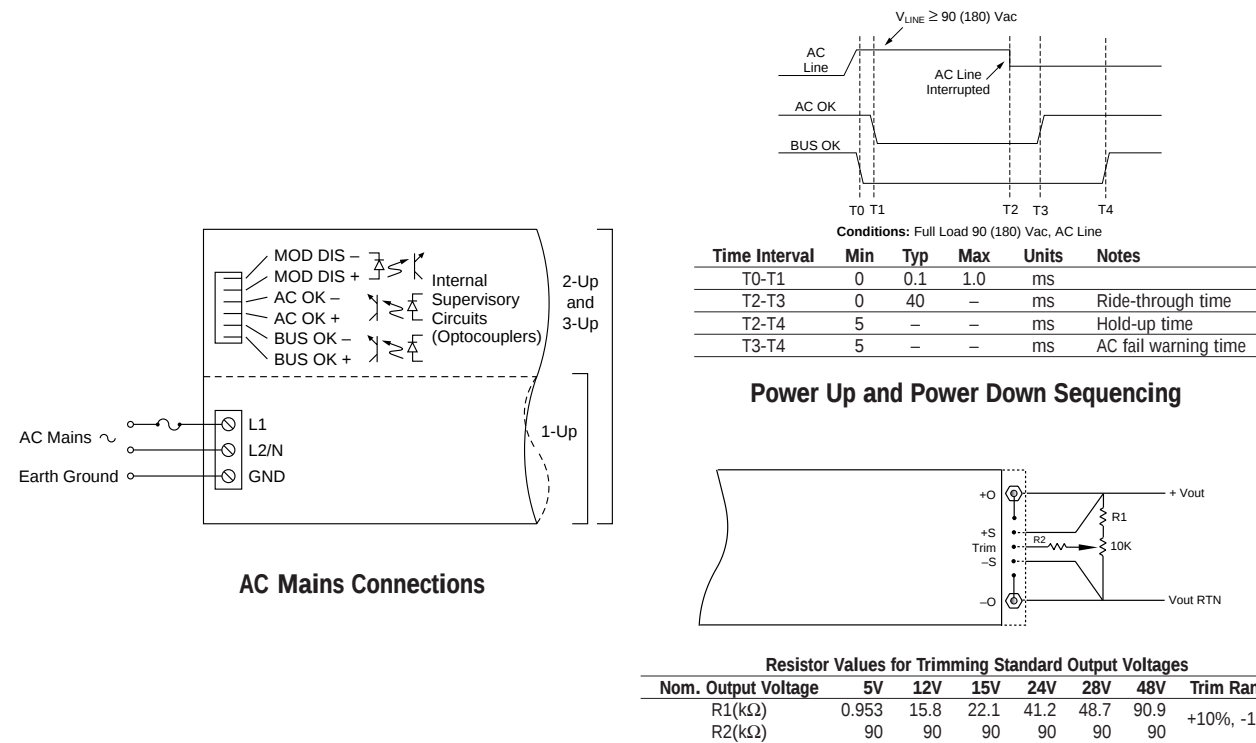
Thermal Curves, 5V Output



Thermal Curves, 10 to 48V Output



Application Circuits



Mechanical Drawings

Inputs

- 1 MOD DIS-
- 2 MOD DIS+
- 3 AC OK-
- 4 AC OK+
- 5 BUS OK-
- 6 BUS OK+
- 7 AC IN L1
- 8 AC IN L2/N
- 9 CHASSIS GND

Input connector,
Amp P/N 644488-6;
mating connector,
MTA-100 IDC Series

Terminals for
#16-12 AWG wire

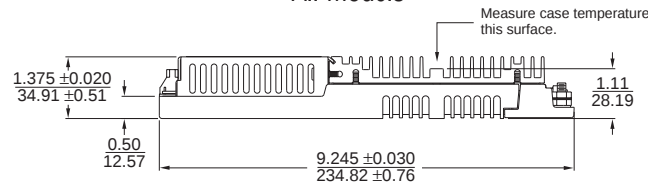
Outputs

- 10 +OUT (#10-32 Stud)
- 11 +OUT
- 12 +SENSE (V_{TRIM}^*)
- 13 TRIM (I_{TRIM}^*)
- 14 -SENSE (I_{MON}^*)
- 15 -OUT
- 16 -OUT (#10-32 Stud)

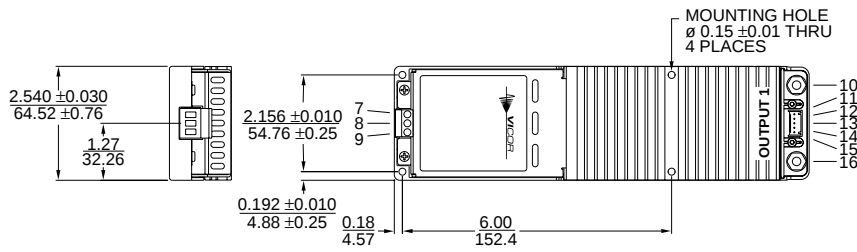
Output connector,
Amp P/N 644486-5;
mating connector,
MTA-100 IDC Series

*On FlatPACs with BatMODs only.

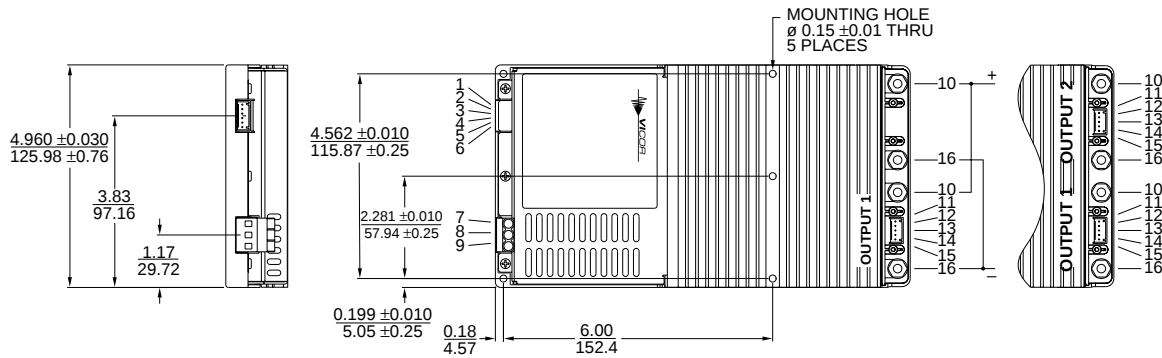
All Models



LU Series



MU, PU Series



NU, QU, RU Series

