

Overview – PFC FlatPAC

The PFC FlatPAC consists of a universal input (85-264V_{AC}) AC front end and one Maxi DC-DC converter in an integrated mechanical assembly providing up to 575W of power. Using the Vicor Harmonic Attenuator Module (HAM) and integrated filtering, the PFC FlatPAC meets EN61000-3-2 harmonic current limits and 0.99 power factor. The internal filtering provides compliance to EN55022-A conducted EMI.

The PFC FlatPAC will accept an input voltage of 85 – 264V_{AC}, derate power at 9W/V_{RMS} as shown in Figure 19.1.

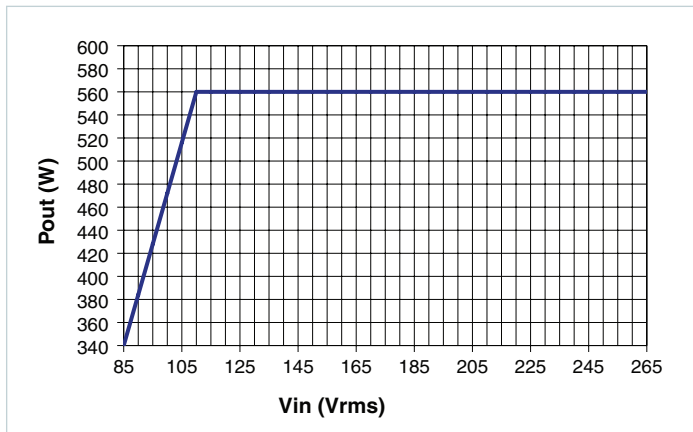


Figure 19.1 — PFC FlatPAC output power vs. input voltage

Circuit Operation

AC line voltage is applied via an agency-approved terminal block providing AC mains (L1, L2/N and GND). Current in the L1 lead is applied to a 15A / 250V internal fuse. This current is interrupted only in the event of a catastrophic failure of a main power component internal to the PFC FlatPAC.

The input current beyond the fuse is passed through an EMC filter designed to meet conducted noise limits of FCC Part 15 EN55022 Class A. At start up, AC inrush current is limited by the HAM’s internal circuitry prior to being passed to the main energy storage capacitors.

The DC-DC converter is held off until the internal DC bus potential has settled to full operating level. The converter is then enabled.

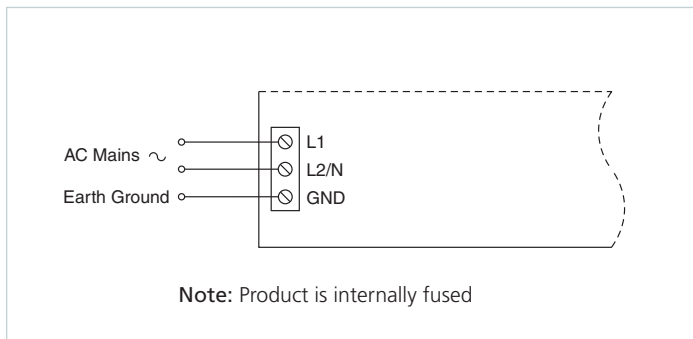


Figure 19.2 — AC mains connections

Fusing: The PFC FlatPAC’s internal fuse is not user-replaceable.

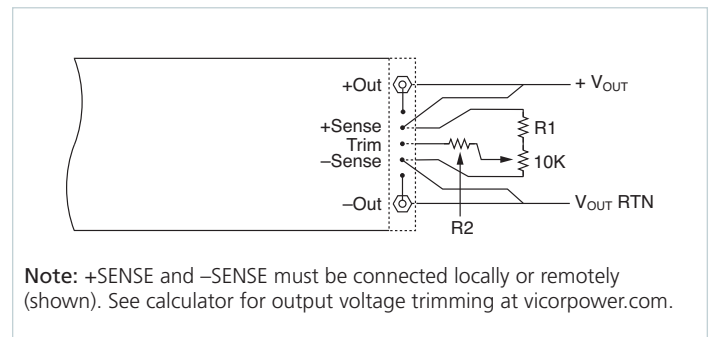
Grounding: To satisfy IEC950 Class I grounding requirements, connect a ground lead to the terminal marked (GND). Use 2.5mm² / #14AWG wire.

Input Voltage Connections: Connect the line voltage to L1 (hot) and L2N (neutral). Use #14AWG input wire. Recommended connector screw torque is 5 – 7in·lbs [0.5 – 0.8 N·m]. Recommended strip length is 8mm. Refer to Figure 19.2.

Output Wire Gauge: Use the output wire gauge that corresponds to the output current of your FlatPAC unit, below: Do not loosen bottom nut. Long cable runs, or wires in large bundles will require heavier cable to avoid excessive voltage drops or overheating.

Output Current & Corresponding Wiring					
100 – 160A	#2	30 – 50A	#8	10 – 15A	#14
75 – 100A	#4	20 – 30A	#10	6 – 10A	#16
50 – 75A	#6	15 – 20A	#12	0 – 6A	#18

Output Voltage Trimming: The Maxi converters used in the PFC FlatPAC have a wide trim range of +10% to –90%. See the Maxi, Mini, Micro Design Guide for details.



Note: +SENSE and –SENSE must be connected locally or remotely (shown). See calculator for output voltage trimming at vicorpower.com.

Figure 19.3 — Output sense and trim

Operating Temperature: Do not allow the PFC FlatPAC to exceed its maximum operating temperature, which is reached when the heat sink is 85°C. (Full power can be delivered up to this temperature.) Heat sink temperature is a function of the output power and voltage of the supply, ambient temperature, and airflow across the heat sink. Always use worst-case conditions when calculating operating temperature.

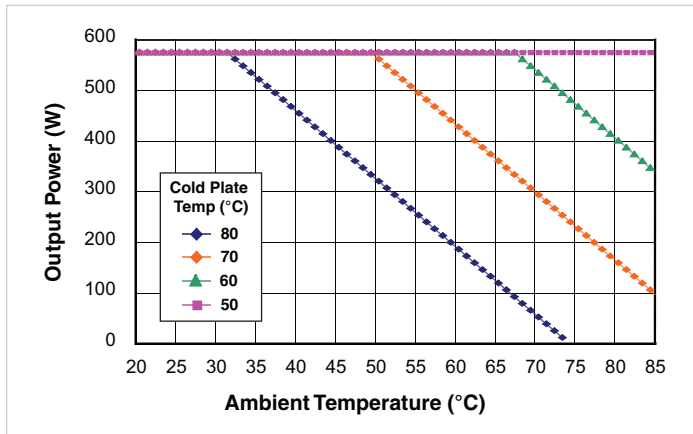


Figure 19.4 — Power de-rating conduction-cooled option

Note 1: To ensure proper heat transfer from the internal module(s) to the heat sink, the mounting holes through the heat sink (three holes on 2-up models) must contain torqued screws at all times during operation, whether or not the unit is mounted. If the unit is operated unmounted, insert a #6 or M3.5 panhead screw through each hole from below and secure with a nut on top, torqued to 6in-lbs [0.7N·m].

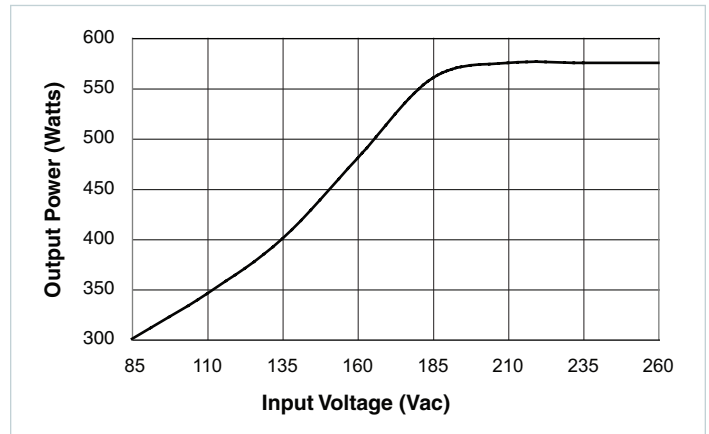


Figure 19.5 — Output power start-up de-rating at -30°C (I-Grade only); five minute warm up required before full power (see Figure 19.1) is available

Note 2: All PFC FlatPAC models are available with a conduction-cooled flat plate instead of the top heat sink. Go to vicorpower.com for outline drawings. Refer to Figure 19.4 for additional de-ratings for the -cc variants.