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## PFC-600LF

UNIVERter® LF Series

600 Watt  
 PFC Front End  
 Full Brick

The UniVerter® PFC-600LF module accepts 85-265 Vac input and converts it to 375 Vdc to power isolated DC-DC post converters. Power factor correction meets low harmonic distortion requirements of EN61000-3-2 and European EN55022 emissions specification when used with Model HH-1199-6 EMI filter. UniVerter® modules utilize a boost converter augmented with a solid state series switch for active inrush and short circuit current limiting.



### OPERATIONAL FEATURES

- Lead-Free / RoHS Compliant Design
- 600 Watts Output Capability
- Near Unity Power Factor & Very Low Harmonic Distortion
- High Efficiencies & Extremely Low Thermal Resistance
- -40 ~ 100°C Baseplate Operation
- Active Inrush Current Limiting & Short Circuit Protection
- Power Fail Warning via DC OK Signal
- Auxiliary (housekeeping) Supply Output (Vaux)
- Load Enable Signal controls downstream Converters
- Safety Agency Approved to UL/cUL 60950 (pending)
- Two Year Warranty

### TYPICAL APPLICATIONS

- AC/DC Power Systems
- Military / COTS
- Industrial Control
- Telecommunication

### MODEL SELECTION

Model Number	Input Voltage	Output Voltage	Output Power
PFC-600LF	85-265Vac	375 Vdc	600W*

\* Derate below 105Vac (see specification)

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Note 1: CE Mark (LVD) & UL / cUL 60950 pending

Astrodyne USA: 1-800-823-8082

Astrodyne Pacific: 886-2-26983458



**ELECTRICAL SPECIFICATIONS** Electrical specifications apply for  $V_{in}=120\text{ Vac @ }60\text{Hz}$ ,  $V_{out}=375\text{Vdc}$ , Full Load,  $T_c=25^\circ\text{C}$  unless specified otherwise

Input	Minimum	Typical	Maximum	Units	Conditions
Input Voltage	85		265	Vac	$T_c = -40^\circ\text{C} \sim 100^\circ\text{C}$
Input Frequency	47		65	Hz	400Hz possible with reduced specs
Inrush Current		16.8	20	Apk	$V_{in}=85 \sim 265\text{Vac}$
Maximum Input Current			7.0	Arms	$V_{in}=105\text{Vac @ }60\text{Hz}$ / Full Load (Calculated over 1 or more line cycles)
Input-to-Case Leakage Current		310		$\mu\text{Arms}$	AC Source = 120Vac @ 60Hz, Single $\Phi$ with one Lead Grounded
Input Turn-On Voltage	70	80	85	Vac	
Input Turn-Off Voltage	65	75	85	Vac	
Ride Through		20		msec	$C_{out}=440\mu\text{F}$ (See Note 2)
Power Factor		0.999		---	$V_{in} = 120\text{Vac} / 60\text{Hz}$ (See Curve)
		0.995		---	$V_{in} = 220\text{Vac} / 60\text{Hz}$ (See Curve)
Total Harmonic Distortion			5	%	
External Fuse Requirement		8		A	Normal Blow
Output	Minimum	Typical	Maximum	Units	Conditions
Output Power	0		600	W	Derate linearly from 600W @ 105Vac to 400W @ 85Vac
Output Voltage	370	375	390	Vdc	$V_{in} = 85 \sim 265\text{Vac} / 0 \sim 100\%$ Load
Current Limit Inception		1.8		A	
Efficiency		91		%	120Vac / 60Hz / Full Load
		94		%	220Vac / 60Hz / Full Load
Output (Hold-Up) Capacitance	110	440		$\mu\text{F}$	$V_{in} < 150\text{Vac}$ (See Note 1)
	220	440		$\mu\text{F}$	$V_{in} > 150\text{Vac}$ (See Note 1)
Holdup Time		30		msec	From Loss of $V_{in}$ to LD ENA = Low, $C_{out}=440\mu\text{F}$ (See Note 1)
Turn-on time					$V_{in}$ in spec to LD ENA = Low, $C_{out} = 440\mu\text{F}$
Auxiliary Output Voltage		14		Vdc	
Auxiliary Output Current		10		mAdc	Short Circuit Protected (see note 3)
DC OK Threshold ( $V_{out}$ rising)	344	360	380	Vdc	DC OK switches from logic low to open drain
DC OK Threshold ( $V_{out}$ falling)	334	350	369	Vdc	DC OK switches from open drain to logic low
LD ENA Threshold ( $V_{out}$ rising)	327	345	362	Vdc	LD ENA switches from logic low to open drain
LD ENA Threshold ( $V_{out}$ falling)	209	220	231	Vdc	LD ENA switches from open drain to logic low
Max Applied Voltage <sub>DC OK / LD ENA</sub>			33	V	Limited by internal ESD protection Diodes
Logic Low Current <sub>DC OK / LD ENA</sub>	-90		0	mAdc	Continuous, Positive current flows out of module
Logic Low Voltage <sub>DC OK / LD ENA</sub>			0.3	Vdc	$I_o = -10\text{mA}$ (sinking)
Isolation	Minimum	Typical	Maximum	Units	Conditions
Input-to-Output Isolation		Non-Isolated			
Input-to-Case Isolation	2500			Vdc	Contact factory for test procedure
Output-to-Case Isolation	2500			Vdc	Contact factory for test procedure
Input/Output-to-Case Capacitance		11.1		nF	Test with all pins shorted together



## ELECTRICAL SPECIFICATIONS *Continued*

Thermal / Mechanical Parameters	Minimum	Typical	Maximum	Units	Conditions
Operating Temperature	-40		100	°C	Measured at center of baseplate
Storage Temperature	-55		+125	°C	
Automatic Shutdown Temperature	101	110		°C	Measured at center of baseplate
Soldering Temperature (Wave Solder)		260		°C	<5 sec in wave
Thermal Resistance, Case to Ambient		3.3		°C/W	Free air, no heatsink T <sub>c</sub> =100°C, T <sub>a</sub> =25°C
Reliability (MTBF)		2.1 x 10 <sup>6</sup>		hrs	Bellcore TR-332, Issue 6 T <sub>c</sub> =40°C, GB, Full Load
Weight		7.2 (204)		oz. (g)	
Size, HxWxL		4.60 x 2.40 x 0.50 (117 x 61 x 12.7)		in (mm)	Full Brick, See Outline Drawing

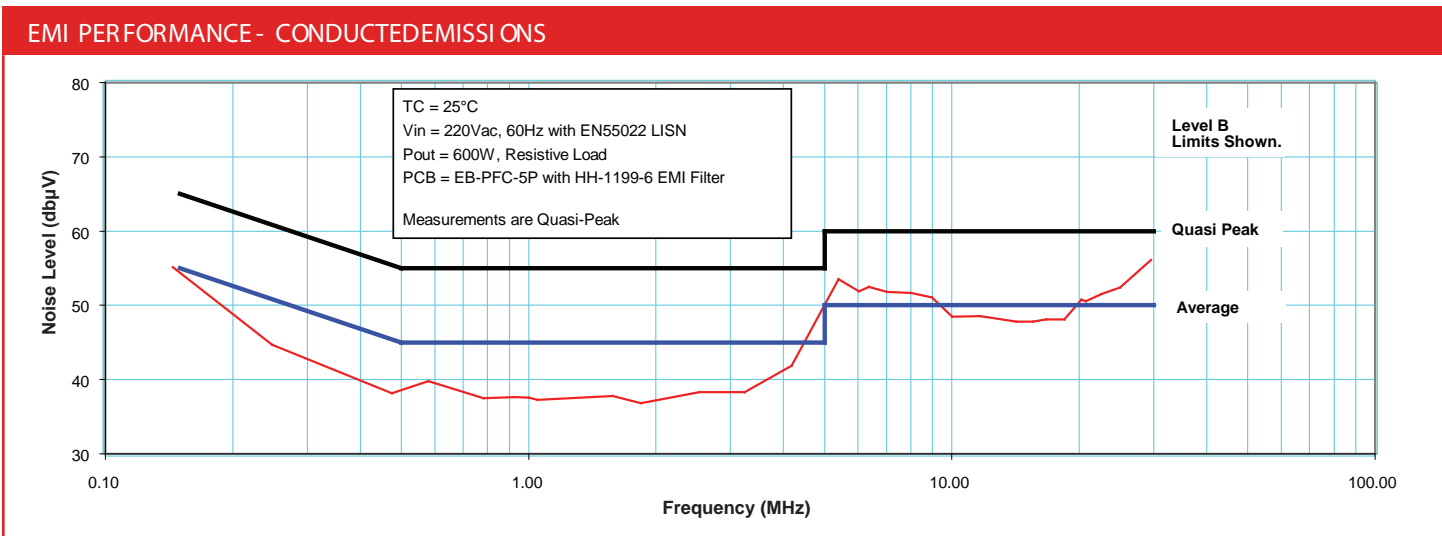
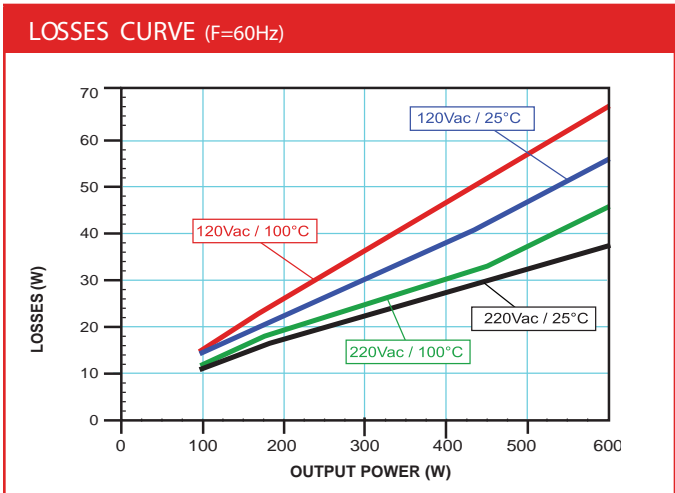
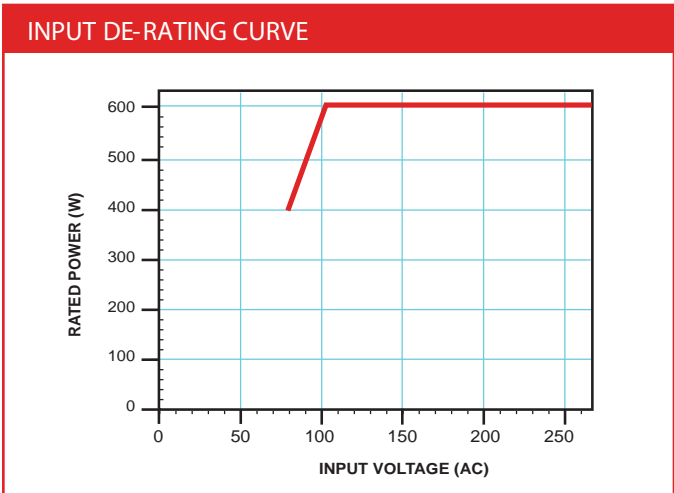
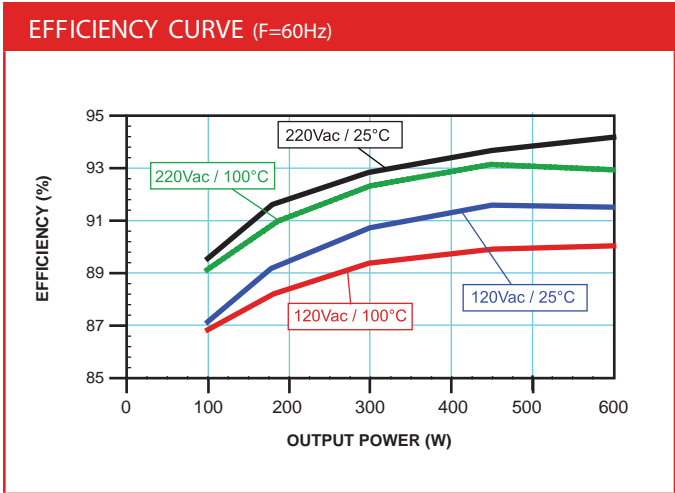
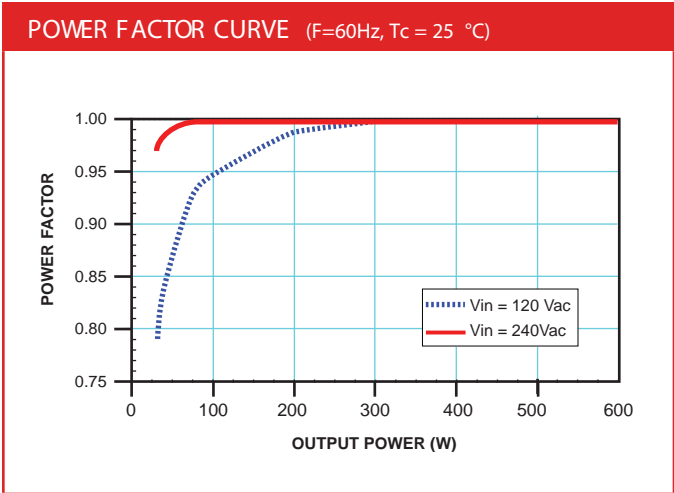
Note 1: Hold-up capacitor values must be chosen carefully to ensure that the minimum capacitance requirements are met over the entire expected operating temperature range of the capacitor. Aluminum Electrolytic capacitors typically used for output holdup can have less than 25% of their nominal capacitance at cold temperatures.

Note 2: Once a loss of input voltage exceed the ride-thru duration, the internal UVLO circuits will force a complete re-start of the module's control circuitry.

Note 3: The auxiliary output is protected against damage from short circuits. However, the operation and performance of the module may be affected if the Vaux current rating is exceeded.

# PF-600LF

600 Watt / PFC Front End / Full Brick

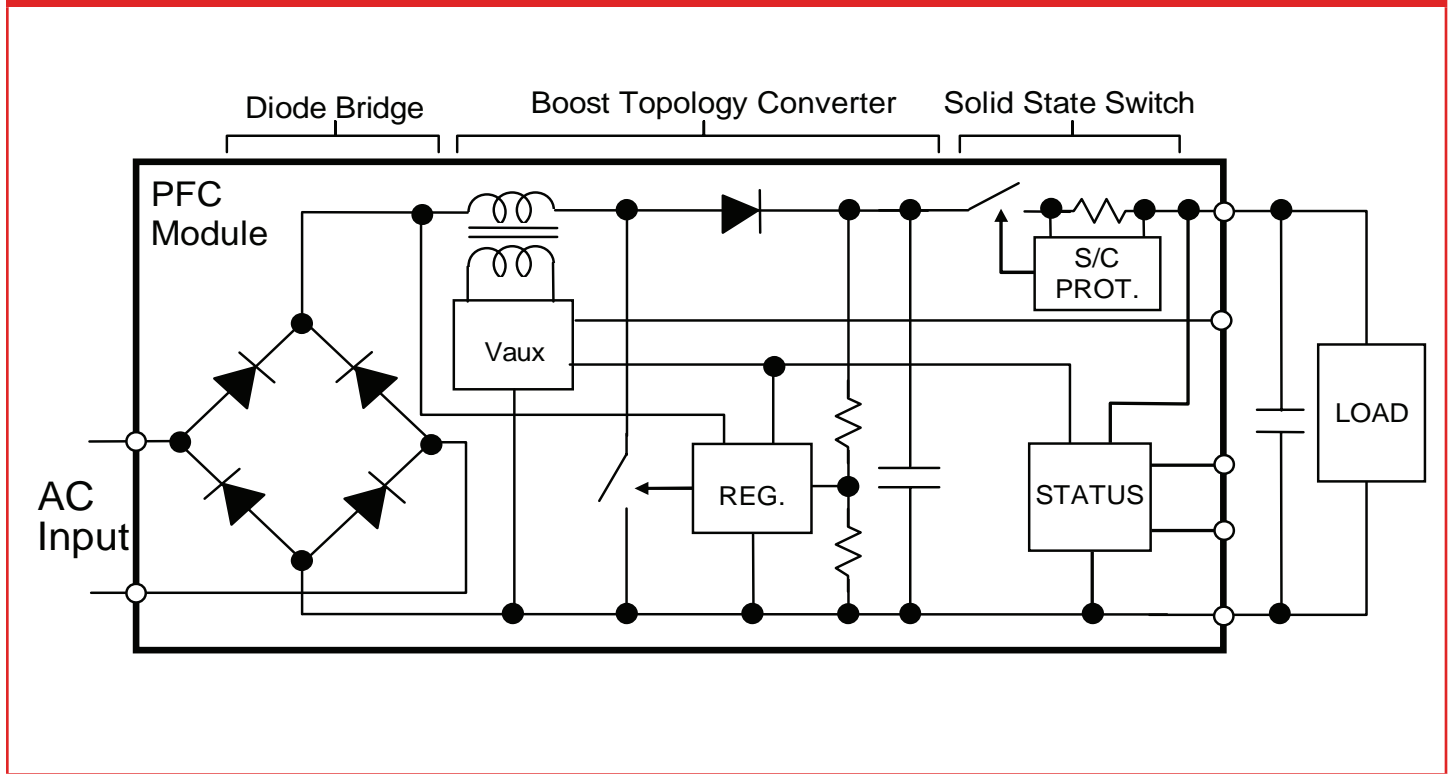


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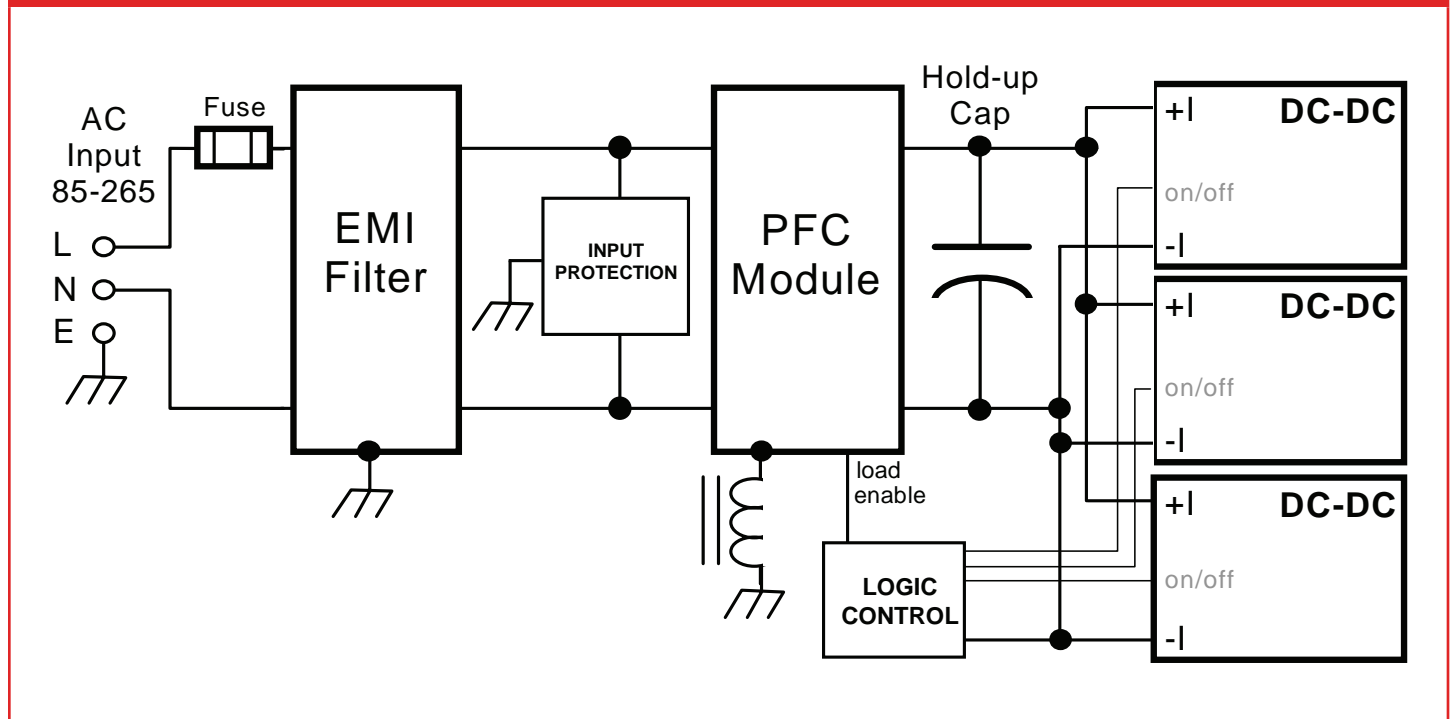
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## INTERNAL CIRCUIT BLOCK DIAGRAM



## APPLICATION BLOCK DIAGRAM



For additional information, see Application Note 24, "Power Factor Correction (PFC) Modules"

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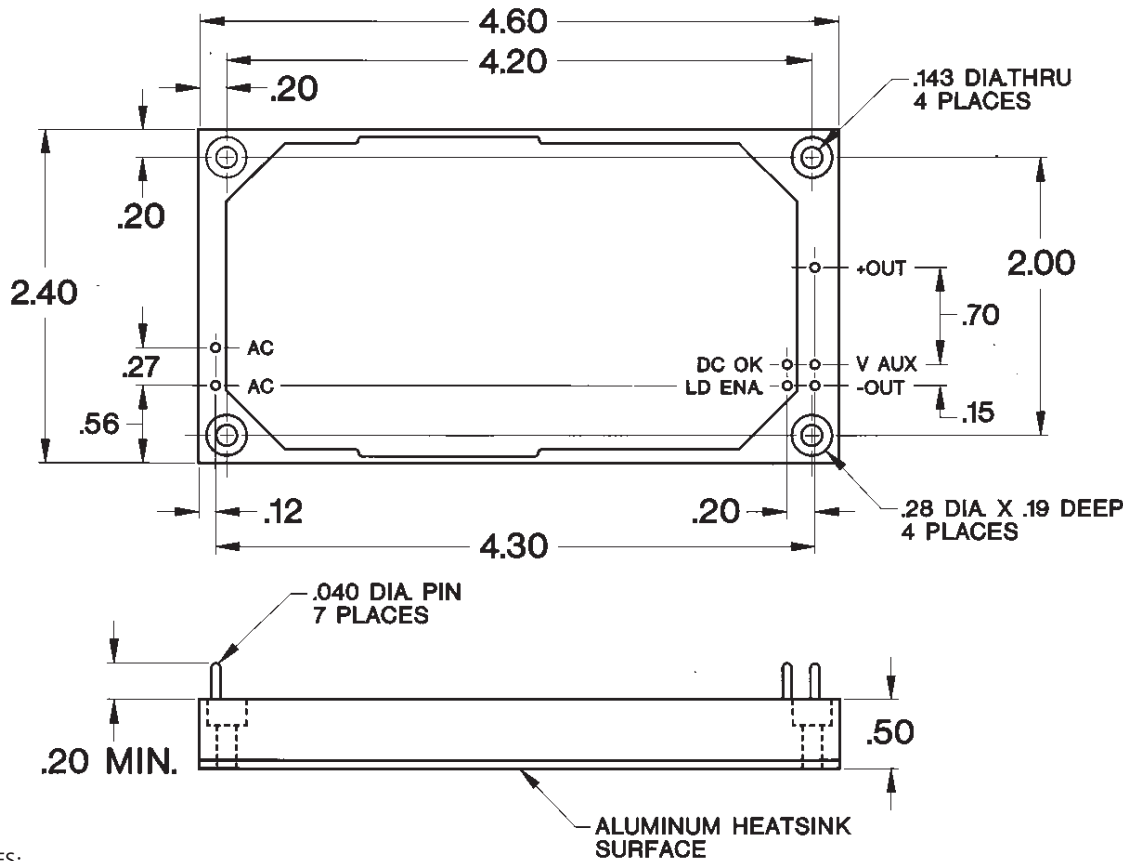
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## OUTLINE DRAWING Dimensions in Inches



### NOTES:

- All pins are brass alloy
- Pin finish is gold over nickel, JESD 97 2nd level interconnect, category e4

### NOTES

REV 080917-B

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