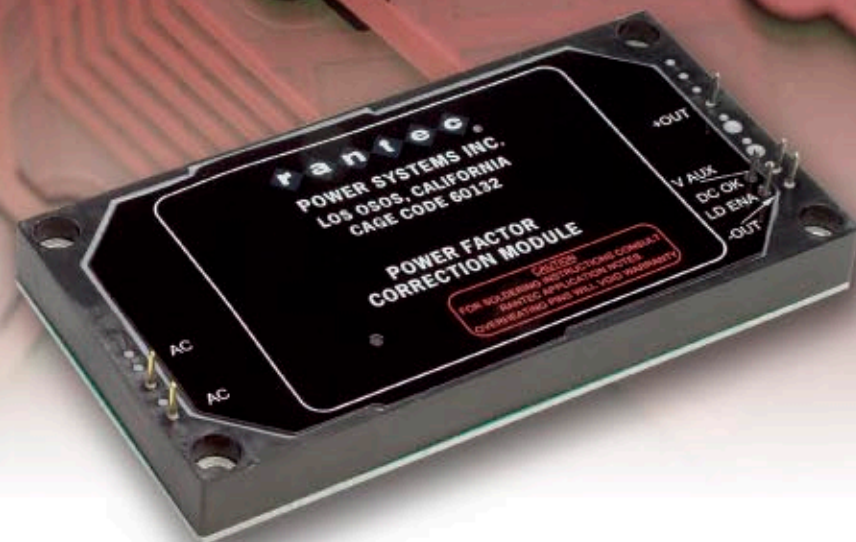


Power Solutions for Today's Military

Power Systems from **COTS+** Building Blocks

HDA SERIES Power Factor Module

- ◆ Up to 600W output
- ◆ Matched to Rantec's HDM series modules
- ◆ MIL-STD-704A-F Compliant
- ◆ Matching HDF-AC EMI filter for MIL-STD-461 compliance
- ◆ Power factor .999 typical
- ◆ Low harmonic distortion
Meets MIL-STD-1399 Section 300A
(less than 3% single, 5% total)
- ◆ Active inrush current limit
- ◆ Internal bias for unlimited hold-up with external capacitor
- ◆ Wide input range
- ◆ 60 or 400 Hz operation
- ◆ Overvoltage and overcurrent protection
- ◆ MIL-STD-810 environments
- ◆ MIL-S-901C shock
- ◆ CS-06 compliant



Rantec's HDA power factor correction module is a complementary building block used to develop performance-based "Power System Solutions" for today's military environment. It allows system designers to develop power systems for AC input requiring ultra low harmonic distortion; while employing the cost and schedule philosophies of commercial off-the-shelf (COTS). The HDA is compliant to the requirements of MIL-STD-704A-F, including: voltage, frequency, power factor, steady state, transients, and drop outs with the proper hold up capacitance on the output. For MIL-STD-461 compliance, use with Rantec's HDF-AC EMI filter. These AC front-ends are specifically designed to interface with Rantec's HDM series DC-DC converters.

The System Designer's Choice

**Rantec Power Team Engineers
Offer Technical Assistance to:**
Evaluate Power System Requirements
Develop Power System Architecture
Reduce Time to Market



Rantec Power Systems Inc.

HDA SERIES

Power Factor Module



HDA MODELS

MODEL	P/N	OUTPUT	CURRENT
HDA-600-01	PL31212	380VDC @ 600W	1.6A
HDA-600-31	PL31405	300VDC @ 600W	2A

INPUT

	MODEL	MIN	TYP	MAX	UNIT	COMMENTS
Voltage	600-01	85		200	VAC	Derated linearly for line voltage below 105V to 400W @ 85V
	600-31	85		185		
Frequency	Both	47		63	Hz	Normal
		360		440		Extended, reduced specifications

OUTPUT

	MODEL	MIN	TYP	MAX	UNITS	COMMENTS
Voltage	600-01		380		VDC	Nominal
	600-31		300			
Regulation Line/Load	Both		5		±%	Typical
Signals: Load Enable	Both					Direct HDM logic on/off signal
Signals: DC OK	600-01		355		VDC	Nominal, < VDC-OK open collector
	600-31		275			

AUXILIARY OUTPUT

Voltage	Both		14		VDC	Typical
Current	Both		10		mA	Typical (2mA max during start-up)

PERFORMANCE

	MODEL	MIN	TYP	MAX	UNIT	COMMENTS
Power Factor	Both	0.995				10% to 100% load

HARMONICS

Total Distortion	Both		3	5	%	
3rd Harmonic			2	3	%	
N>3			1		%	Diminishing as N increases

ISOLATION

Input-Output	Both	Not isolated				
Input-Case		10MΩ minimum @ 1000VDC				
Output-Case						

PROTECTION

Inrush Limit	600-01			15	A	See chart
	600-31			20		
Thermal	Both	100		110	°C	Shutdown, automatic recovery
Over Voltage	600-01		415		VDC	Typical, non-shutdown
	600-31		330			
Over Current	Both		3.0		A	Typical

EFFICIENCY

Efficiency	Both	88			%	25-100% load. See chart.
------------	------	----	--	--	---	--------------------------

SWITCHING FREQUENCY

	Both		140		KHz	Nominal
--	------	--	-----	--	-----	---------

MECHANICAL

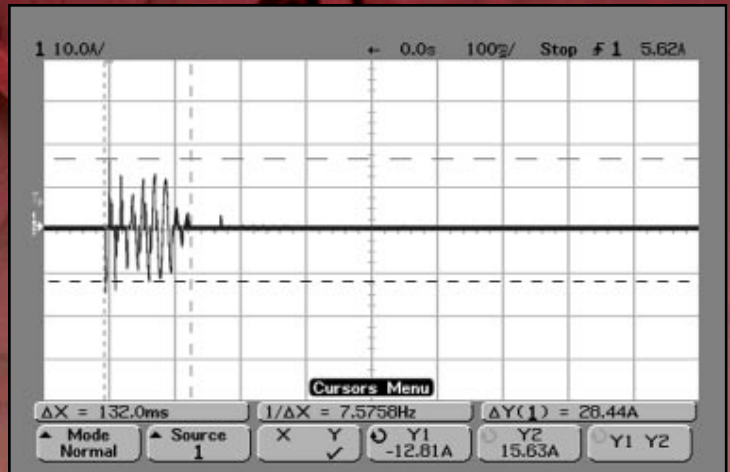
I/O Connection	Wave solderable or inserted into mated sockets
Weight	9 oz. max.
Construction	Fully encapsulated

ENVIRONMENTAL

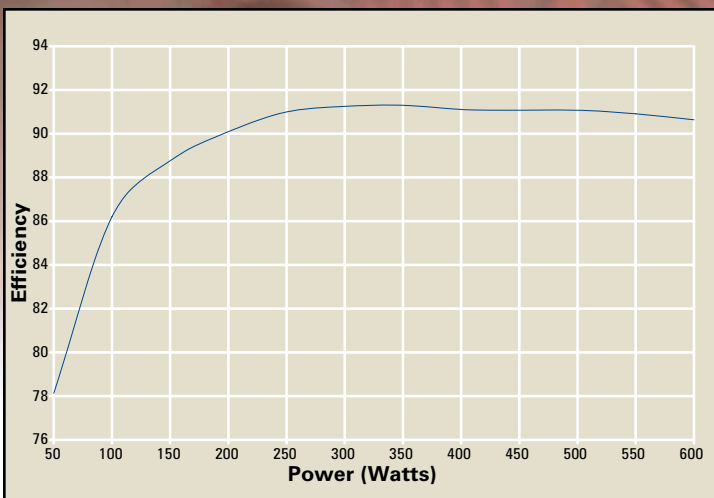
Cooling	Conductively cooled baseplate, +95°C max
Operating Temp.	-55°C to +95°C, baseplate
Storage Temp.	-55°C to +125°C
Humidity	MIL-STD-810C, Meth 507.1, Proc IV (Proc I, II, or III w/optional parylene coating.) MIL-STD-810F, Method 507.4
Shock	MIL-S-901C-D, Grade A, Type A, Class 1 High impact shock
Vibration	MIL-E-5400, Curve IVa, 5 to 2kHz
Salt Fog	MIL-STD-810F, Method 509.4
Altitude	70,000 ft
MTBF	997,005 hours @ 55°C, Ground Benign 299,102 hours @ 55°C, Naval Sheltered per MIL-STD-217F Note 2



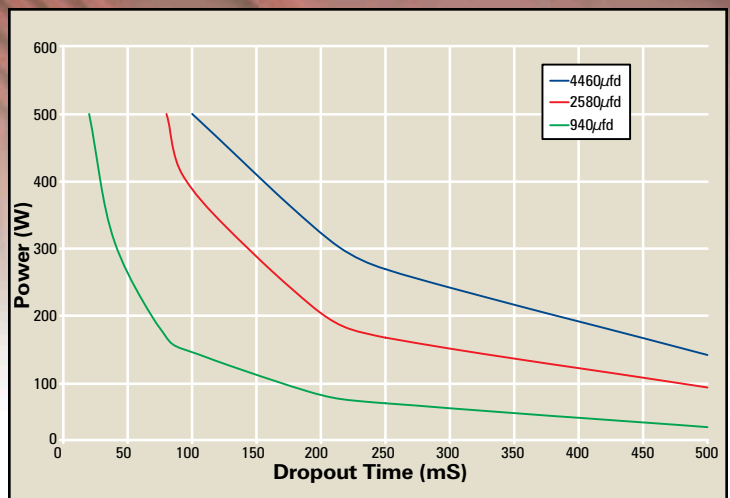
TURN ON TIME
940 μF , 25°C, 500W



INRUSH CURRENT
25°C, 820 μF



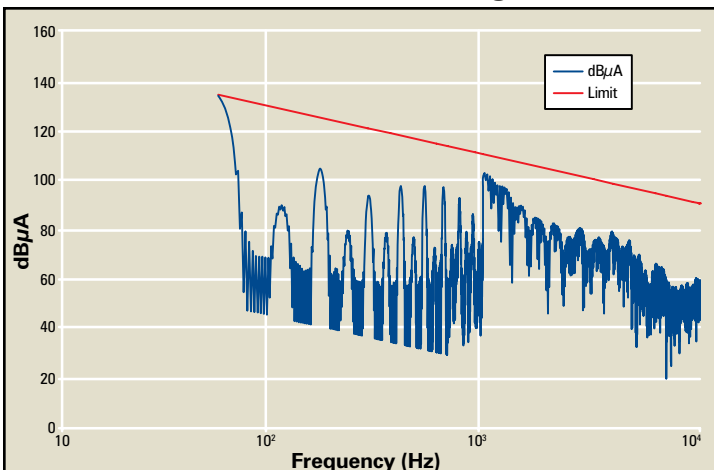
EFFICIENCY VS. LOAD
 $V_{in} = 115\text{VAC}/60\text{Hz}$, 25°C Baseplate Temperature



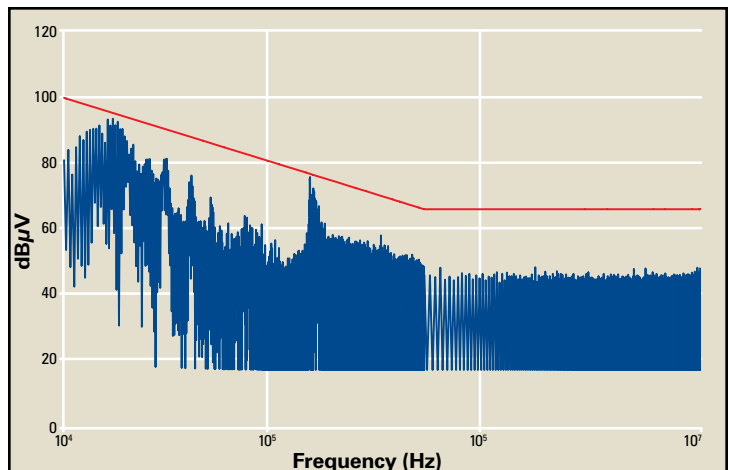
HOLD UP
With External Capacitance, 25°C Baseplate Temperature

MIL-STD-461 COMPLIANCE SOLUTION

Using Rantec's HDF-AC and HDA PFC Modules



MIL-STD-461E 115V CE101
HDA-600-31, HDF-AC EMI Filter, 820 μF Cap








MIL-STD-461E 115V CE101
HDA-600-31, HDF-AC EMI Filter, 820 μF Cap

HDA SERIES

Power Factor Module

HDA ACCESSORIES

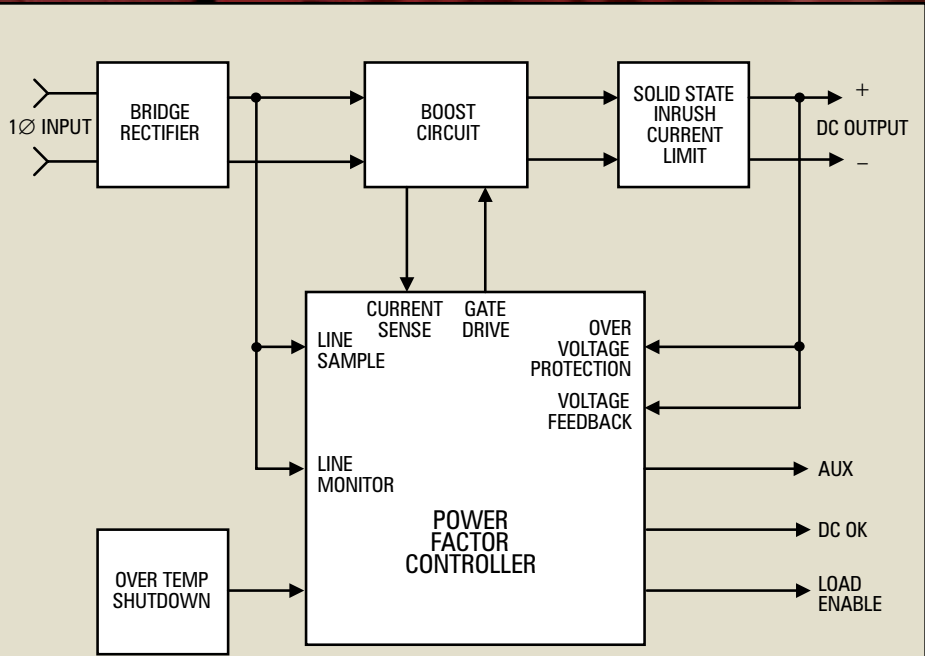
	HDM Series DC-DC Converters 18/48/270Vin
	HDF-AC AC EF Filter Module
	HDA-MB Mounting Board for Evaluation & Prototypes
	HDM-TI Thermal Interface
	HDM-SK Socket Kit

Accessory data sheets available at
www.rantec.com

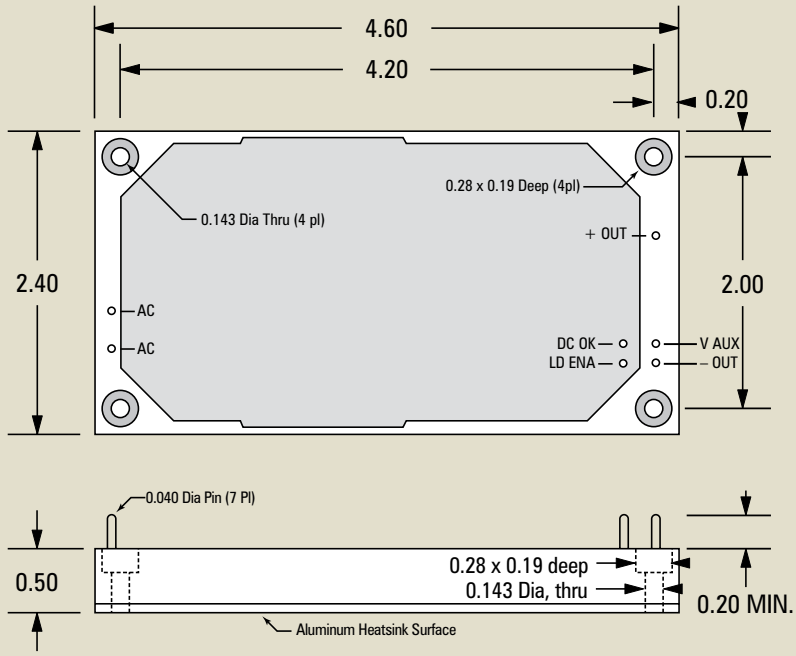
APPLICATION NOTES

DOCUMENT	TITLE
HDMA-107	HDA 600W Single-Phase AC Front End
HDMA-109	MIL-STD-1275A Solution Using Rantec High Density Modules
HDMA-112	Power Supply Hold-Up Considerations

Available at www.rantec.com



FUNCTIONAL BLOCK DIAGRAM



OUTLINE & MOUNTING DIAGRAM

Dimensions are for reference only

Specifications subject to change without notice. ©2008 Rantec Power Systems Inc. All rights reserved. HDA REV 080904

1173 LOS OLIVOS AVE
LOS OSOS CA 93402
FAX 805 596 6006
powersys@rantec.com
www.rantec.com
805-596-6000



Rantec Power Systems Inc.