



# NH100

100 Watts Output Power

SINGLE & DUAL OUTPUTS



How to Order:

**NH 100 D I / 5 / 15 - A - D**

Series  
Total Output Power  
Single (S), Dual (D) Output  
Industrial (I) or Military (M)

Output Voltage: Options:  
Maximum current as stated in chart A- pins out side of unit  
B- pins out bottom of unit  
C- pins out top of unit  
D- through hole inserts (STD threaded)  
I - M2.5 inserts

Model Numbering Example:

To order a 100 watt, 15 Vout (single output), industrial grade power supply with pins out the side, the model number would be: NH100SI/15-A. Military grade would be NH100SM/15-A. To order a 100 watt, dual output, 15 Vdc and 15 Vdc, industrial grade power supply with pins out of the top, the model number would be: NH100DI/15/15-C. Dual output, 12 Vdc and 15 Vdc, military grade, would be NH100DM/12/15-C. When ordering a dual output unit, the first output voltage in the model number is located on channel 1 and the second model number is located on channel 2 (see case drawing for details).

## INPUT CHARACTERISTICS

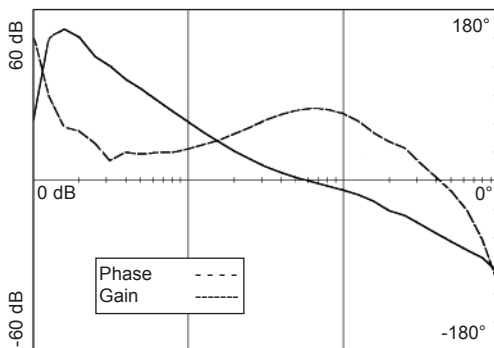
PER CHANNEL

	Min.	Typ.	Max.	Units
Input Voltage	200	270	400	Vdc
Brown Out (75% of Full Load) (fig. I)*	180			Vdc
No Load Power Dissipation		4	6	Watt
Inrush Charge (fig. VII)*		0.24	0.4	mc
Reflective Ripple Current (fig. VIII)*		200		mA
Logic Disable Current (Sink)		10		mA
Logic Disable Power In		4	5	W
Input Ripple Rejection (120 Hz)		75		dB
Input Ripple Rejection (800 Hz)		60		dB
Efficiency (FL) (fig. II, III)*	75	80		%
3.3 Vdc Output (FL)	70	74		%
2 Vdc Output (FL)	60	65		%

EMI: Units conform to MIL-STD-461D (on the input leads) with companion filter

Input Transient: Units conform to MIL-STD-704D for transients up to 500V for 0.1 second

## STABILITY



## FEATURES

- .38 Inch Profile
- Power Good\*\*\*
- Synchronization\*\*
- Remote Turn On (TTL)\*\*\*
- Output Voltage Trim Pin\*\*
- Single and Dual Outputs
- Over Temperature Protection
- N+1 Redundancy (Single Output)
- Output Overvoltage/Overcurrent Protection
- 100% Environmental Screening (Military Version)
- Outputs Isolated Allowing Any Combination of Output Voltages

## SELECTION CHART

Nominal Output Voltage	Single Output Current (Amps)	Dual Per Channel Current (Amps)
2	20	10
3.3	20	10
5	20	10
5.2	19.2	9.6
12	8.4	4.2
15	6.7	3.3
24	4.2	2.1
28	3.6	1.8

## OUTPUT CHARACTERISTICS

PER CHANNEL

	Min.	Typ.	Max.	Units
Set Point Accuracy			1 †	% V <sub>out</sub>
Load Regulation			0.5	% V <sub>out</sub>
Line Regulation			0.5	% V <sub>out</sub>
Ripple P-P (10 MHz) (fig. IV)*			100	mV
<i>100mV or 1% Vout, whichever is greater</i>				
Trim Range		±10		% V <sub>out</sub>
Remote Sense Compensation		0.5		Vdc
Overvoltage Protection		125		% V <sub>out</sub>
Current Sharing		±10		% I <sub>out</sub>
Transient Response (Recovery to 1%Vout) Time/Overshoot				
20-80% Load		500/500		µS/mV
Low Line - High Line		500/500		µS/mV
50-100% Load		500/500		µS/mV
Temperature Drift		.05		%/°C
Long Term Drift		.05		%/1KHrs
Current Limit		130		% I <sub>out</sub>
Short Circuit Current (Burp Mode)	25		75	% I <sub>out</sub>
Turn On Time (fig. XI)*		60		mS
Logic Turn On Time (fig. IX)*		1.0		mS

† 1% or 50mV, whichever is greater

\* Figures on page 10

\*\* Features referenced to Output Ground

\*\*\* Features referenced to Channel 1 Output Ground



*HIGH DENSITY  
DC TO DC CONVERTERS*

**Industrial & Military Grades**

**TEMPERATURE CHARACTERISTICS**

	Min.	Typ.	Max.	Units
Operating	-55		+100	°C
Storage (Ambient)	-55		+125	°C
Over Temperature Shutdown		+105		°C
Thermal Resistance Case - Ambient		11		°C/W

**ENVIRONMENTAL SCREENING - M MODEL**

Stabilization Bake:	+125°C for 24 hours similar to Mil-Std-883, M1008.2, Condition B
Temperature Cycling:	10 cycles at -55°C to +125°C (transition period 36 minutes) similar to Mil-Std-883, M1010, Condition B
Burn-in:	160 hours at +85°C min.
Final Testing	

**ENVIRONMENTAL SCREENING - I MODEL**

Burn-in:	16 hours at +85°C min.
Final Testing	

See "Guide to Operation" for full details.

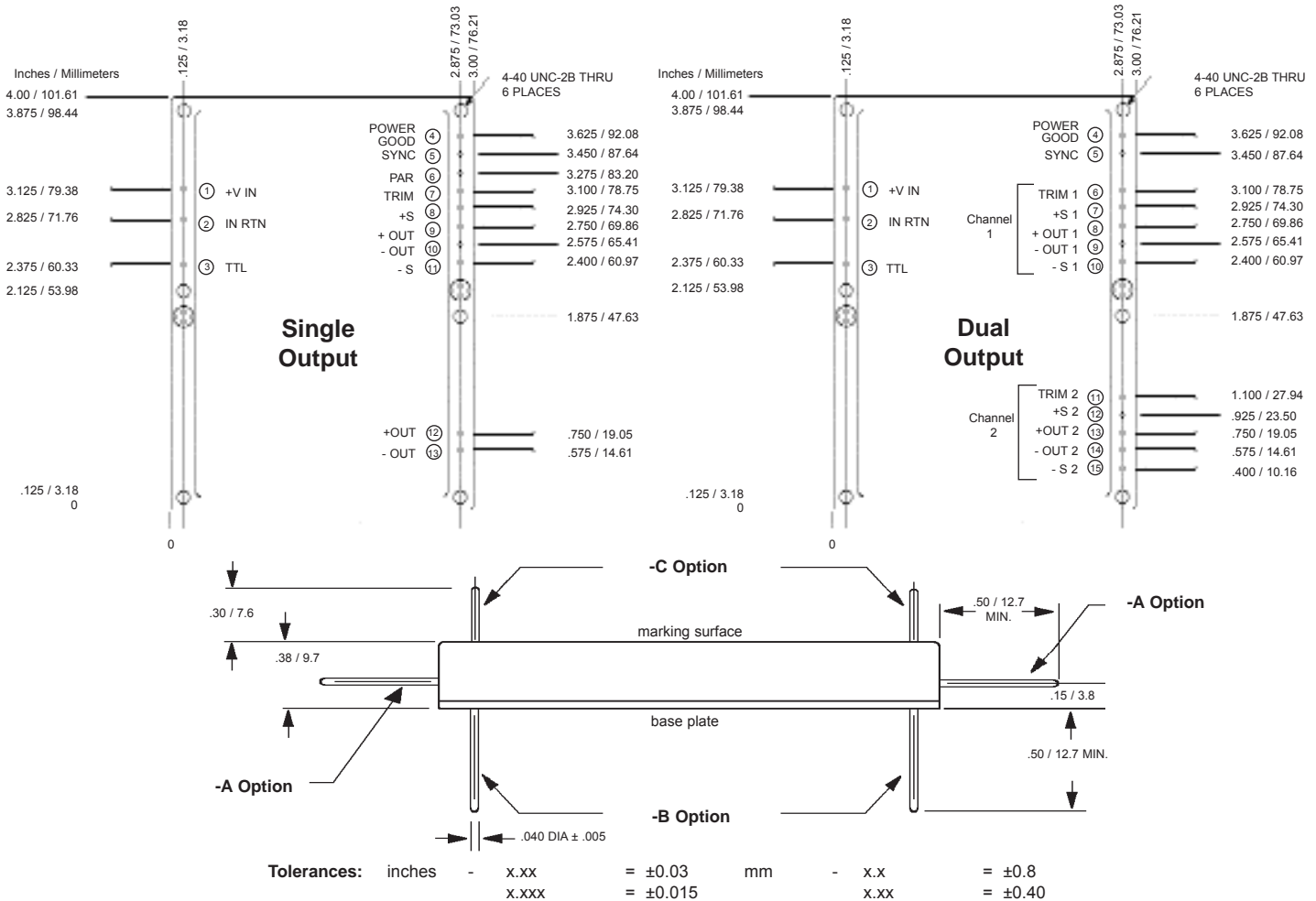
**CASE DRAWINGS**

**ISOLATION CHARACTERISTICS**

	Min.	Typ.	Max.	Units
Isolation:				
Input to Output	1000			Vdc
Output to Base	500			Vdc
Input to Base	1000			Vdc
Input to Output Capacitance (single)		0.044		µf
Input to Output Capacitance (dual)		0.022		µf
Insulation Resistance (@50 Vdc)	50			MOhm

**MECHANICAL CHARACTERISTICS**

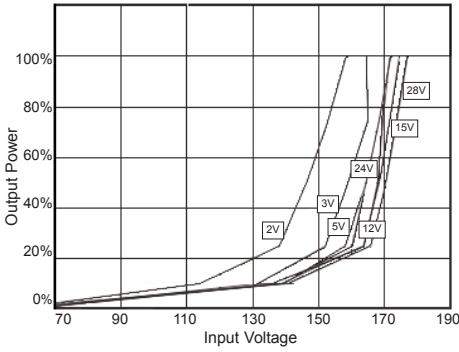
Weight	8.4	oz.
	240	grams
Size	3.0 x 4.0 x 0.38	inch
	76.2 x 101.6 x 9.7	mm
Volume	4.56	inch <sup>3</sup>
	75.1	cm <sup>3</sup>
Material	Pin	Brass (Solder Plating)
	Baseplate	Aluminum 5052-H32
	Case	28 Gauge Steel (cold rolled)
Finish		Nickel Plating
Mounting	Standard	4-40 inserts provided in baseplate
	I Option	M2.5 metric inserts (6 places)
	D Option	0.115 DIA thru holes (6 places)



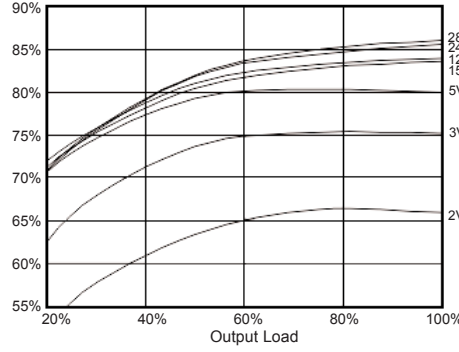


# NH Performance Characteristics

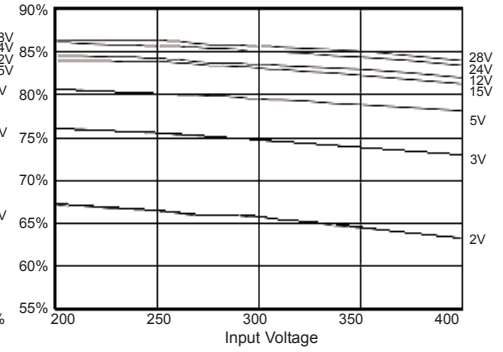
**I. Input Voltage vs. Output Power**



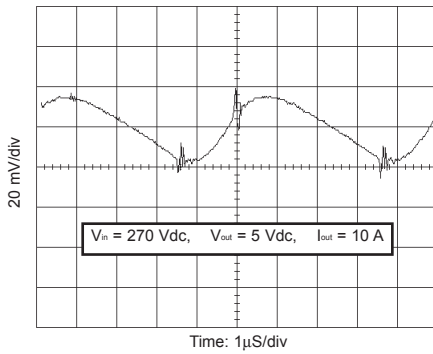
**I. Efficiency vs. Load**



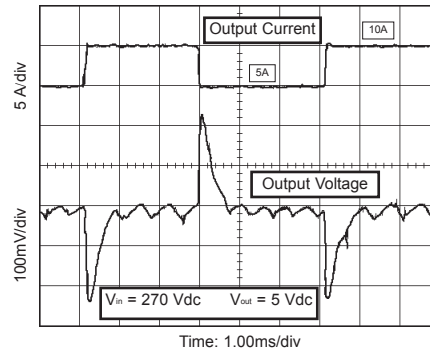
**III. Efficiency vs. Line Voltage**



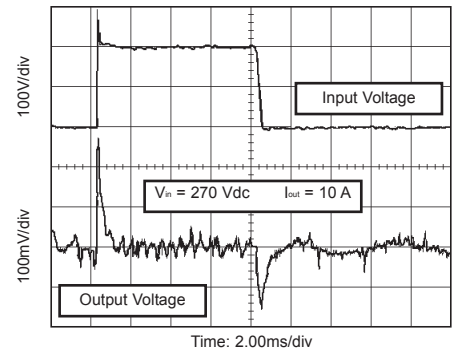
**IV. Output Voltage Ripple**



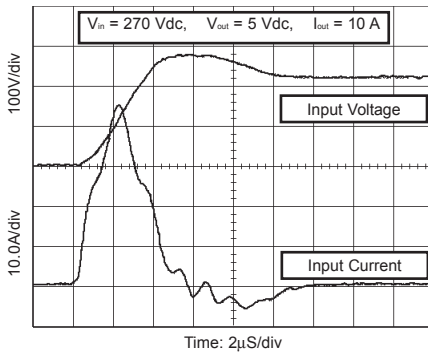
**V. Load Transient Response**



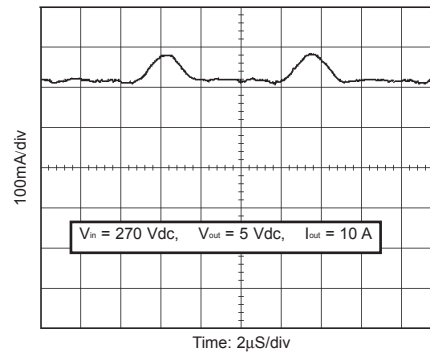
**VI. Input Transient Response**



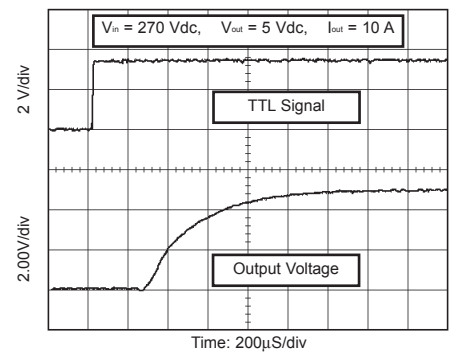
**VII. Input Inrush Current**



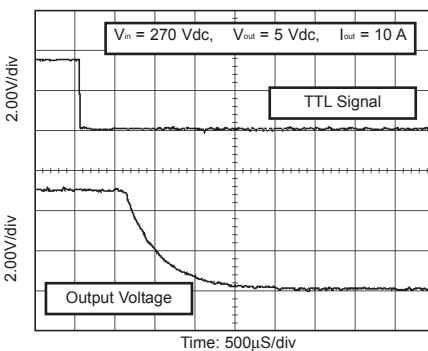
**VIII. Input Current Ripple**



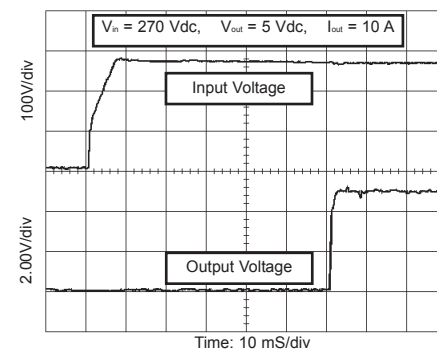
**IX. TTL Turn On**



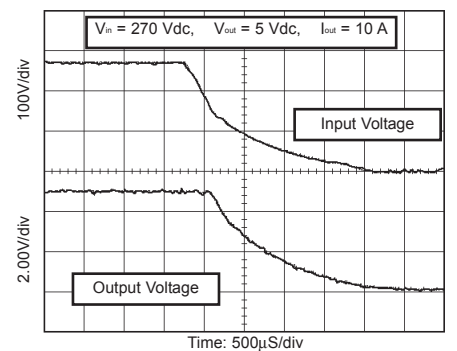
**X. TTL Turn-off**



**XI. Turn On**



**XI. Turn Off / Hold-up Time**





# NHF150

## EMI Filter



### How to Order:

## NHF 150 - A - D

Series	Options:
Total Output Power	A- pins out side of unit
	B- pins out bottom of unit
	C- pins out top of unit
	D- through hole inserts (STD threaded)
	I - M2.5 inserts

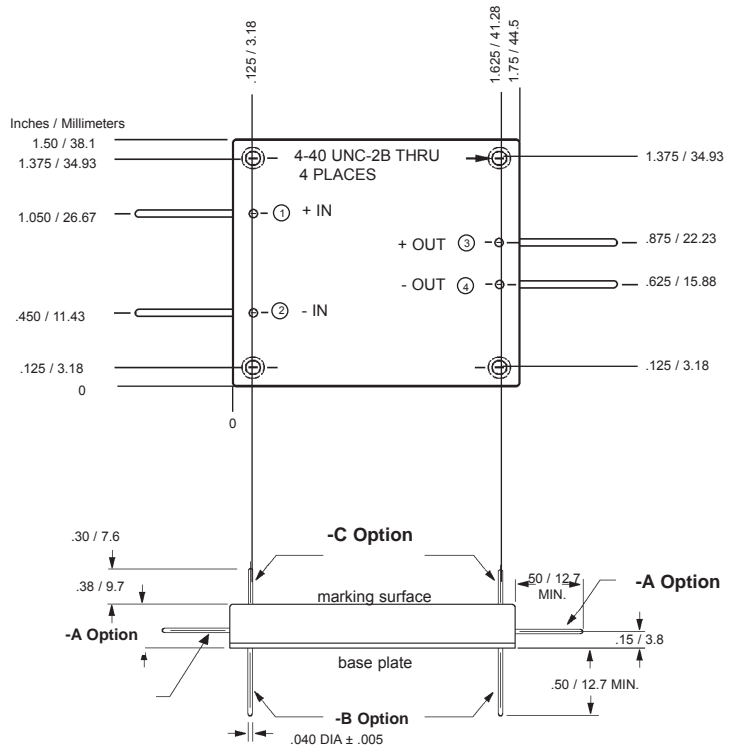
### FEATURES

- MIL-STD-461D Compliance CE101 and CE102
- Thermally Non-dissipative device
- Less than 1.0 Volt Drop Across the NHF150
- Does Not Require External Components
- Meets Environmental Requirements of MIL-STD-810E and MIL-STD-901C
- For Use With NH50, NH100, and NH150 Series DC/DC Converters

### SPECIFICATIONS

Input Voltage (Maximum)	500	Vdc
Rated Output Current	1	A
Isolation (Input/Output to Case)	1000	Vdc
Operating Temperature	100	°C
Storage Temperature	125	°C
Insulation Resistance (measured @ 50Vdc)	50	M Ohm
Weight	1.72	oz.
	48.65	grams
Size	1.75 x 1.5 x 0.38	inch
	44.5 x 38.1 x 9.7	mm
Volume	1.00	inch <sup>3</sup>
	16.5	cm <sup>3</sup>
Material	Pin	Brass (Solder Plating)
	Baseplate	Aluminum 5052-H32
	Case	28 Gauge Steel (cold rolled)
Finish		Nickel Plating
Mounting	Standard:	4-40 inserts provided in basplate
	I Option:	M2.5 metric inserts (4 places)
	D Option:	0.115 DIA thru holes (4 places)

### CASE DRAWINGS



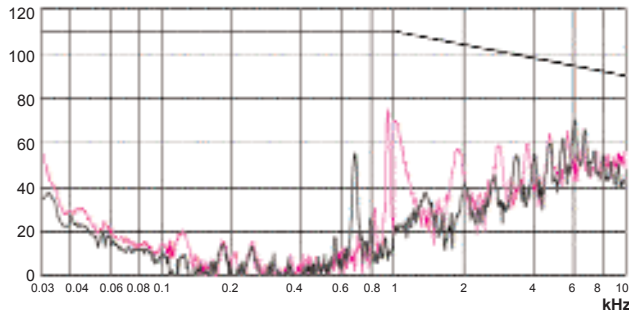
Tolerances:	inches	-	x.xx	= ±0.03
			x.xxx	= ±0.015
	mm	-	x.x	= ±0.8
			x.xx	= ±0.40



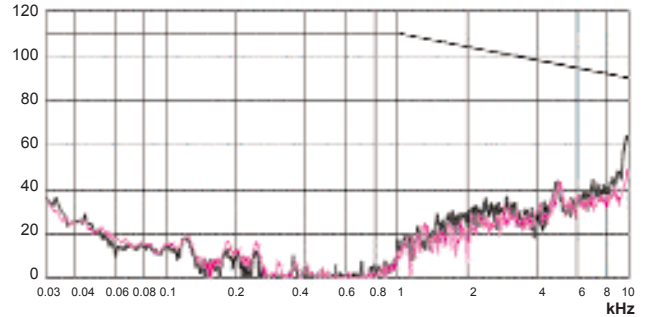
## EMI COMPLIANCE GRAPHS

### Mil-STD-461D, CE101

270 V<sub>in</sub> - 150 watts



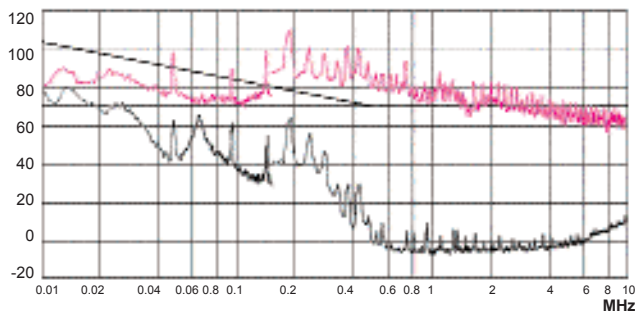
270 V<sub>in</sub> - 50 watts



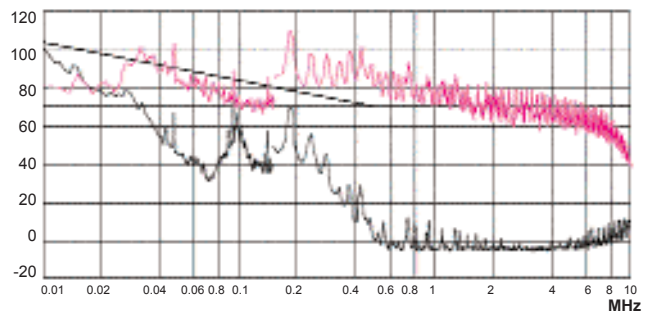
■ Without NHF150  
 ■ With NHF150

### Mil-STD-461D, CE102

270 V<sub>in</sub> - 150 watts



270 V<sub>in</sub> - 50 watts



■ Without NHF150  
 ■ With NHF150