Embedded Power for **Business-Critical Continuity** 

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# NLP150L Series Quad output

**Total Power:** Input Voltage: 90 - 264VAC # of Outputs:

110-150W Ouad

## **Special Features**

- 90 VAC to 264 VAC universal input range
- Provides low voltage outputs (3.3 V)
- EN61000-3-2 compliant
- Overvoltage and short circuit protection
- Power fail detection Current sharing (on VA and VB)
- 3.8 x 7.8 x 1.26 inches
- UL, CSA and VDE safety approvals and CE-marked to LVD
- Compliance to EN55022-B conducted noise standard
- Compliance to EN55022-A radiated noise standard
- Meets all applicable and relevant immunity standards EN61000-4-2, -3, -4, -5 and -6
- Available RoHS compliant
- 2 year warranty

# Safety

VDE 0805/EN60950/IEC950 File No. 10401-3336-0162/47587 Licence No. 123897

UL1950 File No. E136005

CSA C22.2 No. 950 File No. LR41062C



The NLP150L series of 150 Watt ac-dc open-frame power supplies are available with single, triple or guad outputs. The guad output versions described in this datasheet are housed in a 3.8 x 7.8 x 1.26 inch package. All NLP150L series power supplies are harmonic current corrected to meet the EN61000-3-2 standard, and support current sharing. The power supplies are designed for use in 1U shelves or boxes, and are primarily intended for networking applications that have a heavy logic content, such as access concentrators, midrange routers, LAN switches and shared media hubs.





# **Specifications**

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All specifications are typical at nominal input, full load at 25°C unless otherwise stated

Main output Auxiliary outputs	±2.0% ±5.0%
At turn-on	1.5 s, max.
Main output 75% to 100% step at 0.1 A/µs	5.0% or 250 mV max. dev., 1 ms max. recovery to 1%
	±0.02%/°C
Main outputs	125%, ±10%
Cyclic operation	Continuous
Single and multiple	See table
Universal input	90-264 Vac
	47-63 Hz
264 Vac (cold start)	40 A max.
264 Vac, 60Hz	0.99 mA
120 Vac @ 150 W 230 Vac @ 150 W	1.95 A rms 1.10 A rms
UL/IEC127	F3.15A H, 250 Vac
0)	
EN55022, FCC part 1 EN61000-3-2 EN61000-4-2	
	At turn-on Main output 75% to 100% step at 0.1 A/µs Main outputs Cyclic operation Cyclic operation Single and multiple Universal input 264 Vac (cold start) 264 Vac, 60Hz 264 Vac, 60Hz 120 Vac @ 150 W 230 Vac @ 150 W 230 Vac @ 150 W 230 Vac @ 150 W 230 Vac @ 150 W

EMC CHARACTERISTICS	continued) <sup>(10)</sup>	
Surge Fast transients Radiated immunity Conducted immunity	EN61000-4-5 EN61000-4-4 EN61000-4-3 EN61000-4-6	Level 3 Level 3 Level 3 Level 3 Level 3
GENERAL SPECIFICATION	IS	
Hold-up time	120 Vac @ 60 Hz	20 ms @ 150 W
Efficiency	120 Vac @ 150 W	73% typical
Isolation voltage	Input/output Input/chassis	3000 Vac 1500 Vac
Approvals and standards pending		50, VDE0805, IEC950 0, CSA C22.2 No. 950
Weight		540 g (19 oz)
MTBF (@ 25°C)	MIL-HDBK-217F Bellcore	350,000 hours min. 800,000 hours min.
ENVIRONMENTAL SPECIE	FICATIONS <sup>(8)</sup>	
ENVIRONMENTAL SPECIE Thermal performance	Operating ambient, (See derating curve)	0 °C to +50 °C
	Operating ambient, (See derating curve) Non-operating	-40 °C to +85 °C
	Operating ambient, (See derating curve)	-40 °C to +85 °C
	Operating ambient, (See derating curve) Non-operating 50 °C to 70 °C ambient convection cooled 0 °C to 50 °C ambient	-40 °C to +85 °C nt, Derate to 50% load
	Operating ambient, (See derating curve) Non-operating 50 °C to 70 °C ambier convection cooled	-40 °C to +85 °C nt, Derate to 50% load c, 110 W
	Operating ambient, (See derating curve) Non-operating 50 °C to 70 °C ambient convection cooled 0 °C to 50 °C ambient convection cooled 0 °C to 50 °C ambient 300 LFM forced air	-40 °C to +85 °C nt, Derate to 50% load c, 110 W
Thermal performance	Operating ambient, (See derating curve) Non-operating 50 °C to 70 °C ambient convection cooled 0 °C to 50 °C ambient convection cooled 0 °C to 50 °C ambient 300 LFM forced air Peak (0 °C to +50 °C)	-40 °C to +85 °C nt, Derate to 50% load c, 110 W
Thermal performance Relative humidity	Operating ambient, (See derating curve) Non-operating 50 °C to 70 °C ambient convection cooled 0 °C to 50 °C ambient 300 LFM forced air Peak (0 °C to +50 °C) Non-condensing Operating	-40 °C to +85 °C nt, Derate to 50% load c, 110 W c, 150 W 5% to 95% RH 10,000 feet max.

# **Specifications Contd.**

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OUTPUT	OUTPUT CURRENT			– RIPPLE <sup>(4)</sup>	TOTAL	MODEL
VOLTAGE	MIN (5)	MAX <sup>(1)</sup>	300 LFM <sup>(2)</sup>		REGULATION	NUMBERS (12,13)
5.1 V (VA)	1.5 A	20 A	30 A	50 mV	±2.0%	NLP150L-96Q5366Y
+3.3 V (V <sub>B</sub> )	0.5 A	10 A	15 A	50 mV	±2.0%	
+12 V (V <sub>C</sub> )	0 A	2 A	3 A	120 mV	±5.0%	
12 V, <sub>iso</sub> (V <sub>D</sub> )	0 A	0.65 A	1 A	120 mV	±5.0%	

### Notes 1

Free air convection.

- Multiple output units: maximum continuous output power not to exceed 110 W and the output current not to exceed:  $I_A + I_B + 2(I_C + I_D) \le 23 \text{ A}$ . 300 LFM forced air cooling from the longer side.
- Multiple output units: maximum continuous output power not to exceed 150
- W and the output current not to exceed:  $I_A+I_B+2(I_C+I_D)\leq 32$  A. Peak output current lasting less than 30 seconds with duty cycle less than 5%. 3
- During peak loading, output voltage may exceed total regulation limits. Figure is peak-to-peak for room temperature rating. Output noise measurements are made across a 20 MHz bandwidth using a 6 inch twisted 4 pair, terminated with a 10  $\mu$ F electrolytic capacitor and a 0.1  $\mu$ F ceramic capacitor.
- Minimum load required for correct start-up and operation on single outputs and on main output of multiple versions. Failure to observe minimum load on main output will not allow the supply to start-up correctly. Some electronic test loads have a large delay time before they start drawing current even though the 5 voltage from the supply is present. During this time delay, there is no load on the output and as a result, the supply may not be able to start-up properly and maintain its correct output voltage. In these instances, a dummy resistive load across the output may be necessary to load the output of the supply until the test load can function correctly and draw the intended minimum load. Minimum load required on auxiliary outputs to maintain regulation.
- Three orthogonal axes, random vibration 10 minutes for each axes, 2.4 G rms 5 6 Hz to 500 Hz.
- For optimum reliability no part of the heatsink should exceed 110 °C and no semi-conductor case temperature should exceed 120 °C. CAUTION: Allow a minimum of 1 second after disconnecting line power when 7
- 8 This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product. 9
- equipment and must not be operated as a stand alone product. Conducted EMI specifications reference measurements made with the power supply mounted on a grounded metal sheet extending 1 inch beyond each edge, using an unshielded cable. No external filtering required during conducted emissions testing but some applications may require additional filtering to achieve system compliance. Compliance with Radiated EMI near diffusions measurements in a subsche and sume 10
- specifications may require mounting in a suitable enclosure. 11 All models require a minimum mounting stand-off of 6.35 mm (0.25 inches) in the end use product.
- 12 The 'Y' suffix indicates that these parts are non Pb-free (RoHS 5/6) compliant. RoHS 6/6 (Pb-free) compliant versions are also available by replacing the suffix Y with the suffix 'J' e.g. NLP150L-96Q5366J. **13** NOTICE: Some models do not support all options. Please contact your local
- Artesyn representative or use the on-line model number search tool at http://www.artesyn.com/powergroup/products.htm to find a suitable alternative



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Mechanical Notes A All dimensions are in inches (mm).



CONNECTOR AND MATING CONNECTOR TYPES			
CONNECTOR	ТҮРЕ	MATING CONNECTOR TYPE	
J1	Molex 26-60-4030 or equivalent	Molex 09-50-3031 or equivalent with Molex 08-50-0105 or equivalent crimp terminals	
J2	Male 0.250 quick disconnect	Molex 22-01-AA-5261, AA22-01 or equivalent	
J3	Molex 26-60-4040 or equivalent	Molex 09-50-3041 or equivalent with Molex 2478 phosphor bronze or equivalent crimp terminals	
J5	Beau Interconnect 70505-C-50 or equivalent	70 5 05-C50	
J6	Molex 22-23-3021 or equivalent	Molex 22-01-2021 and contact 08-50-0113 terminals or equivalent	
JRM3, JRM5	Leoco 2421P02H000 or equivalent	Leoco 2420S02000 and contact 2453TPB00V1	
& JCS			

Note:

J1 PIN CONNECTIONS		
Pin 1	Neutral	
Pin 2	Void	
Pin 3	Line	

J3 PIN CONNECTIONS		
Pin 1	V <sub>D</sub> Positive	
Pin 2	V <sub>D</sub> RTN	
Pin 3	V <sub>C</sub> Positive	
Pin 4	V <sub>C</sub> RTN	

J5 PIN CONNECTIONS		
Pin 1	V <sub>A</sub> Positive	
Pin 2	V <sub>A</sub> Positive	
Pin 3	Main RTN	
Pin 4	Main RTN	
Pin 5	V <sub>B</sub> Positive	

Pin 3	V <sub>C</sub> Positive		
Pin 4 V <sub>C</sub> RTN			
JRM5 PIN CONNECTIONS			
Pin 1	V₄ Sense +		

Pin 2

JRM3 PIN	CONNECTIONS
Pin 1	V <sub>B</sub> Sense +
Pin 2	V <sub>B</sub> Sense -

V <sub>D</sub> is a floating output.	
It can be configured as positibe or negative	е

ONNECTIONS	J6 PIN (	J6 PIN CONNECTIONS		JC	S PIN CONNECTIONS
V <sub>A</sub> Sense +	Pin 1	Signal		Pin 1	Load A Current Sharing
V <sub>A</sub> Sense -	Pin 2	RTN		Pin 2	Load B Current Sharing

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