NLP150L Series



Single and triple outputs

LOW TO MEDIUM POWER AC/DC POWER SUPPLIES | 110-150W AC/DC Universal Input Switch Mode Power Supplies

EMC CHARACTERISTICS (continued) (11)

Surge

Level B

Level A

Level 3

Level 3

Compliant

Fast transients

Relative humidity

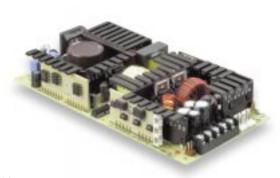
Vibration (See Note 6)

Altitude

Shock

- 90VAC to 264VAC universal input range
- · Provides low voltage outputs of 3.3V
- EN61000-3-2 compliant
- · Overvoltage and short circuit protection
- · Power fail detection
- Current sharing (on V_A and V_B)
- 3.8 x 6.8 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

The NLP150L series of 150 Watt AC/DC open frame power supplies are available with single, triple or quad outputs. The single and triple output versions described in this datasheet are housed in a 3.8 x 6.8 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.



Patent No. 5600546 and 5652700

2 YEAR WARRANTY

Level 3 Level 3

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

SPECIFICATIONS

| OUTPUT SPECIFICATIO | NS | |
|--------------------------------------|---|--|
| Total regulation (Line and load) | Main output Auxiliary outputs | ±2.0% ±5.0% |
| Turn-on delay | @ 120VAC Input | 2.0s, max. |
| Transient response | Main output 75% to 100% step at 0.1A/µs | 5.0% or 250mV max. dev., 1ms max. recovery to 1% |
| Temperature coefficient | | ±0.02%/°C |
| Overvoltage protection | Main outputs | 125%, ±10% |
| Short circuit protection | Cyclic operation | Continuous |
| Minimum output current | Singles and multi | ple See table |
| INPUT SPECIFICATIONS | 5 | |
| Input voltage range (See Note 12) | Universal input | 90 to 264VAC |
| Input frequency range | | 47Hz to 63Hz |
| Input surge current | 264VAC (cold sta | rt) 40A max. |
| Safety ground leakage current | 264VAC, 60Hz | 0.99mA |
| Input current | 120VAC @ 150W 230VAC @ 150W | 1.95A rms 1.10A rms |
| Input fuse | UL/IEC127 | F3.15A H, 250VAC |
| EMC CHARACTERISTIC | CS (11) | |

EN55022, FCC part 15

EN55022, FCC part 15

EN61000-3-2

EN61000-4-2

EN61000-4-2

Conducted emissions

Radiated emissions

Harmonic current

ESD air

ESD contact

emission correction

| Conducted immunity | EN61000-4-3 Level 3 EN61000-4-6 Level 3 | |
|---------------------------------|---|--|
| GENERAL SPECIFICAT | IONS | |
| Hold-up time | 120VAC @ 60Hz | 20ms @ 150W |
| Efficiency (See Note 13) | 120VAC @ 150W | 73% typical |
| Isolation voltage | Input/output 3000VA Input/chassis 1500VA | |
| Approvals and standards pending | | 0, VDE0805, IEC950 CSA C22.2 No. 950 |
| Weight | | 540g (19oz) |
| MTBF (@ 25°C) | MIL-HDBK-217F Bellcore | 350,000 hours min. 800,000 hours min. |
| ENVIRONMENTAL SPE | CIFICATIONS (8) | |
| Thermal performance | Operating ambient, (See derating curve) | 0°C to +50°C |
| | Non-operating | -40°C to +85°C |
| | 50°C to 70°C ambie convection cooled | ent, Derate to 50% load |
| | 0°C to 50°C ambien convection cooled | t, 110W |
| | 0°C to 50°C ambien 300LFM forced air | it, 150W |
| | Peak (0°C to +50°C) | (See Note 3) |

Non-condensing

Non-operating

5Hz to 500Hz

per MIL-STD-810E

Operating

EN61000-4-5

EN61000-4-4

5% to 95% RH

10,000 feet max.

30,000 feet max.

2.4G rms peak

516.4 Part IV

NLP150L Series



Single and triple outputs

LOW TO MEDIUM POWER AC/DC POWER SUPPLIES | 110-150W AC/DC Universal Input Switch Mode Power Supplies

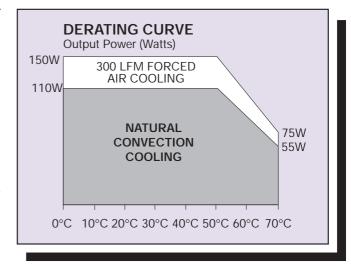
For the most current data and application support visit www.artesyn.com/powergroup/products.htm

| OUTPUT | | OUTPUT CURRENT | | - RIPPLE ⁽⁴⁾ | TOTAL | MODEL |
|-------------------------|--------------------|--------------------|------------------------|-------------------------|------------|----------------|
| VOLTAGE | MIN ⁽⁵⁾ | MAX ⁽¹⁾ | 300 LFM ⁽²⁾ | - RIPPLE (7) | REGULATION | NUMBERS |
| 3.3V (V _A) | 1A | 22A | 30A | 50mV | ±2.0% | NLP150L-96S3 |
| 5.1V (V _A) | 1A | 22A | 30A | 50mV | ±2.0% | NLP150L-96S5 |
| +12V (V _A) | 0.3A | 9.2A | 12.5A | 120mV | ±2.0% | NLP150L-96S6 |
| 24V (V _A) | 0.15A | 4.6A | 6.5A | 240mV | ±2.0% | NLP150L-96S8 |
| 48V (V _A) | 0.1A | 2.3A | 3.2A | 480mV | ±2.0% | NLP150L-96S9 |
| +5.1V (V _A) | 1.5A | 20A | 30A | 50mV | ±2.0% | NLP150L-96T536 |
| +3.3V (V _B) | 0.5A | 10A | 15A | 50mV | ±2.0% | |
| +12V (V _C) | 0A | 2A | 3A | 120mV | ±5.0% | |
| +12V (V _A) | 0.6A | 9.2A | 12.5A | 120mV | ±2.0% | NLP150L-96T658 |
| +5.1V (V _B) | 0.5A | 6A | 8A | 50mV | ±2.0% | |
| +24V (V _C) | 0A | 2.0A | 3.0A | 240mV | ±5.0% | |

Notes

- Free air convection.
 - Multiple output units: maximum continuous output power not to exceed 110W and the output current not to exceed: I_A+I_B+2(I_C)≤23A.
- 300LFM forced air cooling from the longer side. Multiple output units: maximum continuous output power not to exceed 150W and the output current not to exceed: I_A+I_B+2(I_C)≤32A.

 Peak power at 115% lasting less than 30 seconds with duty cycle less than
- 5%. 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 20MHz bandwidth using a 6 inch twisted 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 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, 2.4G rms 5Hz to 500Hz.
- For optimum reliability no part of the heatsink should exceed 110°C and no semi-conductor case temperature should exceed 115°C.
- CAUTION: Allow a minimum of 1 second after disconnecting line power when making thermal measurements.
- This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.
- 10 The 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
- 11 All models require a minimum mounting stand-off of 6.35mm (0.25 inches) in the end use product.
- 12 Operational range 90VAC to 264VAC.
- 13 For 3.3V ouput (single), typical efficiency is 69%.



International Safety Standard Approvals

VDE0805/EN60950/IEC950 UL1950

Please consult our website for the following items: ✓ Application Note

www.artesyn.com

NLP150L Series



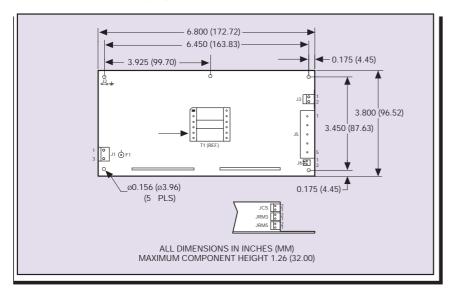
Single and triple outputs

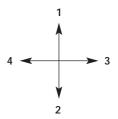
LOW TO MEDIUM POWER AC/DC POWER SUPPLIES | 110-150W AC/DC Universal Input Switch Mode Power Supplies

For the most current data and application support visit www.artesyn.com/powergroup/products.htm

Mechanical Notes

A All dimensions are in inches (mm).





Recommended direction for forced air relative to power supply orientation shown below.

- Best.
- Good.
- Not recommended.
- Not recommended.

| CONNECTOR AND MATING CONNECTOR TYPES | | |
|--------------------------------------|--|--|
| CONNECTOR | TYPE | 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 AA-5261, AA22-01 or equivalent |
| J3 | Molex 26-60-4040 or equivalent | Molex 09-50-3021 or equivalent with Molex 2478 phosphor bronze or equivalent crimp terminals |
| J5 | Beau Interconnect 70505-C-50 or equivalent | N/A |
| 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 | | |

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

| J3 PIN CONNECTIONS | |
|--------------------|-------------------------|
| Pin 1 | V _D Positive |
| Pin 2 | V _D RTN |

Note: $V_{D \text{ is a floating output.}}$ It can be configured as positibe or negative

| J5 PIN CONNECTIONS | | |
|--------------------|-------------------------|--|
| Pin 1 | V _A Positive | |
| Pin 2 | V _A Positive | |
| Pin 3 | Main RTN | |
| Pin 4 | Main RTN | |
| Pin 5 | V _B Positive | |

| JRM5 PIN | CONNECTIONS |
|----------|------------------------|
| Pin 1 | V _A Sense + |
| Pin 2 | V _A Sense - |

| JRM3 PIN | CONNECTIONS |
|----------|------------------------|
| Pin 1 | V _B Sense + |
| Pin 2 | V _B Sense - |

| J6 PIN CONNECTIONS | |
|--------------------|--------|
| Pin 1 | Signal |
| Pin 2 | RTN |

| JCS PIN CONNECTIONS | | |
|---------------------|------------------------|--|
| | Load A Current Sharing | |
| Pin 2 | Load B Current Sharing | |

Data Sheet © Artesyn Technologies® 2002

The information and specifications contained in this data sheet are believed to be correct at time of publication. However, Artesyn Technologies accepts no responsibility for consequences arising from printing errors or inaccuracies. Specifications are subject to change without notice. No rights under any patent accompany the sale of any such product(s) or information contained herein.

Please consult our website for the following items:

Application Note

www.artesyn.com