Embedded Power for
Business-Critical Continuity



# NLP250 Series
## Single output

**Total Power:** 250W
**Input Voltage:** 85 - 264VAC
**# of Outputs:** Single


RoHS 2002/95/EC


## Special Features

- Active PFC and EN61000-3-2 compliant
- 250 W on main channel with forced air
- Low profile fits 1U applications
- U-Channel for maximum thermal performance
- Optional cover (CJ suffix)
- 5 V standby output
- 12 V fan output
- Integrated ORing diode
- Active current sharing
- Integrated control and monitoring features
- Overcurrent, overvoltage and overtemperature protection
- Compliance to EN55022-B conducted noise standard
- RoHS compliant
- 2 year warranty

## Safety

VDE0805/EN60950-1
IEC950/IEC60950-1
File No. 1040100-3336-0210

UL/cUL 60950-1
CSA-C22.2 60950-1
File No. E135734

Certificate No. 40014041

CB Ref DE1-32468

# Electrical Specifications

| | | |
|---|---|---|
| **Input** | | |
| Input voltage range | Universal input | 85-264 Vac |
| Input frequency range | | 47-63 Hz |
| Input surge current | 264 Vac (cold start) | 40 A max. |
| Safety ground leakage current | 264 Vac, 50 Hz | 1 mA |
| Input current | 120 Vac @ 250 W<br>230 Vac @ 250 W | 2.78 A rms<br>1.36 A rms |
| Input fuse | UL/IEC127 | T6.3 AH, 250 Vac |
| **Output** | | |
| Maximum power | 200 LFM fored air<br>250 LFM with cover | 250 watts |
| Total regulation<br>(line and load) | Main output<br>Auxiliary outputs | ±2.0%<br>±5.0% |
| Turn-on delay | @ 120 Vac Input | 2.0 s max. |
| Transient response | Main output<br>50-100%<br>step at 0.5 A/µs | 5.0% or 250 mV<br>max. dev., 1 ms max.<br>recovery to 1% |
| Temperature coefficient | | ±0.02%/°C |
| Overvoltage protection | Main output | 115%, ±5% |
| Short circuit protection | Cyclic operation | Continuous |
| Minimum output current | Singles | 0 A |
| Auxiliary outputs<br>(See Note 8) | 5 Vsb<br>12 V (fan) | 5 V @ 1.0 A<br>12 V @ 0.3 A |

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

| EMC Characteristics [5] | | |
|---|---|---|
| Conducted emissions | EN55022, FCC part 15 | Level B |
| Harmonic current correction | EN61000-3-2 | Compliant |
| ESD air | EN61000-4-2 | Level 3 |
| ESD contact | EN61000-4-2 | Level 3 |
| Radiated immunity | EN61000-4-3 | Level 3 |
| Fast transients | EN61000-4-4 | Level 3 |
| Surge | EN61000-4-5 | Level 3 |
| Conducted immunity | EN61000-4-6 | Level 3 |

| General Specifications | | |
|---|---|---|
| Hold-up time | 85 Vac @ 60 Hz | 20 ms @ 250 W |
| Efficiency | 115 Vac @ 250 W<br>230 Vac @ 250 W | 84% typ.<br>86% typ. |
| Isolation voltage | Input/output<br>Input/chassis | 3000 Vac<br>1500 Vac |
| Safety approvals (see note 6) | UL/cUL UL60950-1, VDE EN60950-1<br>CAN/CSA22.2 No. 60950-1 | |
| Weight | 650g (22oz) | |
| MTBF (@25° C) | Telcordia SR-332<br>MIL-HDBK-217F | 317,000 hours min.<br>158,000 hours min. |

# Environmental Specifications

| | | |
|---|---|---|
| Thermal performance | Operating ambient,<br>(See derating curve) | 0° C to +70 °C |
| | Non-operating | -40 °C to +85 °C |
| | 0 °C to 50 °C ambient,<br>200 LFM forced air<br>250 LFM with cover | 250 W |
| | 0 °C to 50 °C ambient,<br>0 °C to 40 °C with cover<br>convection cooled | 175 W |
| | 50 °C to 70 °C ambient,<br>convection cooled | Derate linearly<br>to 50% load |
| Relative humidity | Non-condensing | 5-95% RH |
| Altitude | Operating | 10,000 feet max. |
| | Non-operating | 30,000 feet max. |
| Vibration (See Note 7) | 5-500 Hz | 2.4 G rms peak |
| Shock | per MIL-STD-810E | 516.4 Part IV |

## Ordering Information

| Output Voltage | Output Current | | | Ripple (3) | Total Regulation | Model Numbers (9,10) |
|---|---|---|---|---|---|---|
| | Min | Max (free air) (1,4) | Max (forced air) (2,4) | | | |
| 12 V | 0 A | 14.6 A | 21 A | 120 mV | ±2.0% | NLP250R-96S12J |
| 24 V | 0 A | 7.3 A | 10.5 A | 240 mV | ±2.0% | NLP250R-96S24J |
| 48 V | 0 A | 3.65 A | 5.25 A | 480 mV | ±2.0% | NLP250R-96S48J |

**Notes**

1. Free air convection. Maximum continuous output power not to exceed 175 W. Refer to Figure 1 for the derating curve.
2. 200 LFM (250 LFM with cover) forced air cooling from the longer side. Maximum continuous output power not to exceed 250 W.
3. Figure is peak-to-peak for room temperature rating. Output noise measurements are made across a 20 MHz bandwidth using a 6 inch twisted pair, terminated with a 10 µF tantalum capacitor and a 0.1 µF ceramic capacitor.
4. CAUTION: Allow a minimum of 1 second after disconnecting line power when making thermal measurements. For optimum reliability no part of the heatsink should exceed 115 °C and no semi-conductor case temperature should exceed 120 °C.
5. No external filtering required during conducted emissions testing but some applications may require additional filtering to achieve system compliance. Compliance with radiated EMI specifications may require mounting in a suitable enclosure.
6. This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.
7. Three orthogonal axes, random vibration 10 minutes for each axes, 2.4 G
8. 5 V sb (standby) output is available whenever AC is present, regardless of remote ON/OFF signal status. 12 V (fan) present when main output is present.
9. The 'J' suffix indicates that these parts are Pb-free (RoHS 6/6) compliant. "CJ" suffix indicates covered RoHS version.
10. 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.

**Figure 2: Mechanical Drawing**

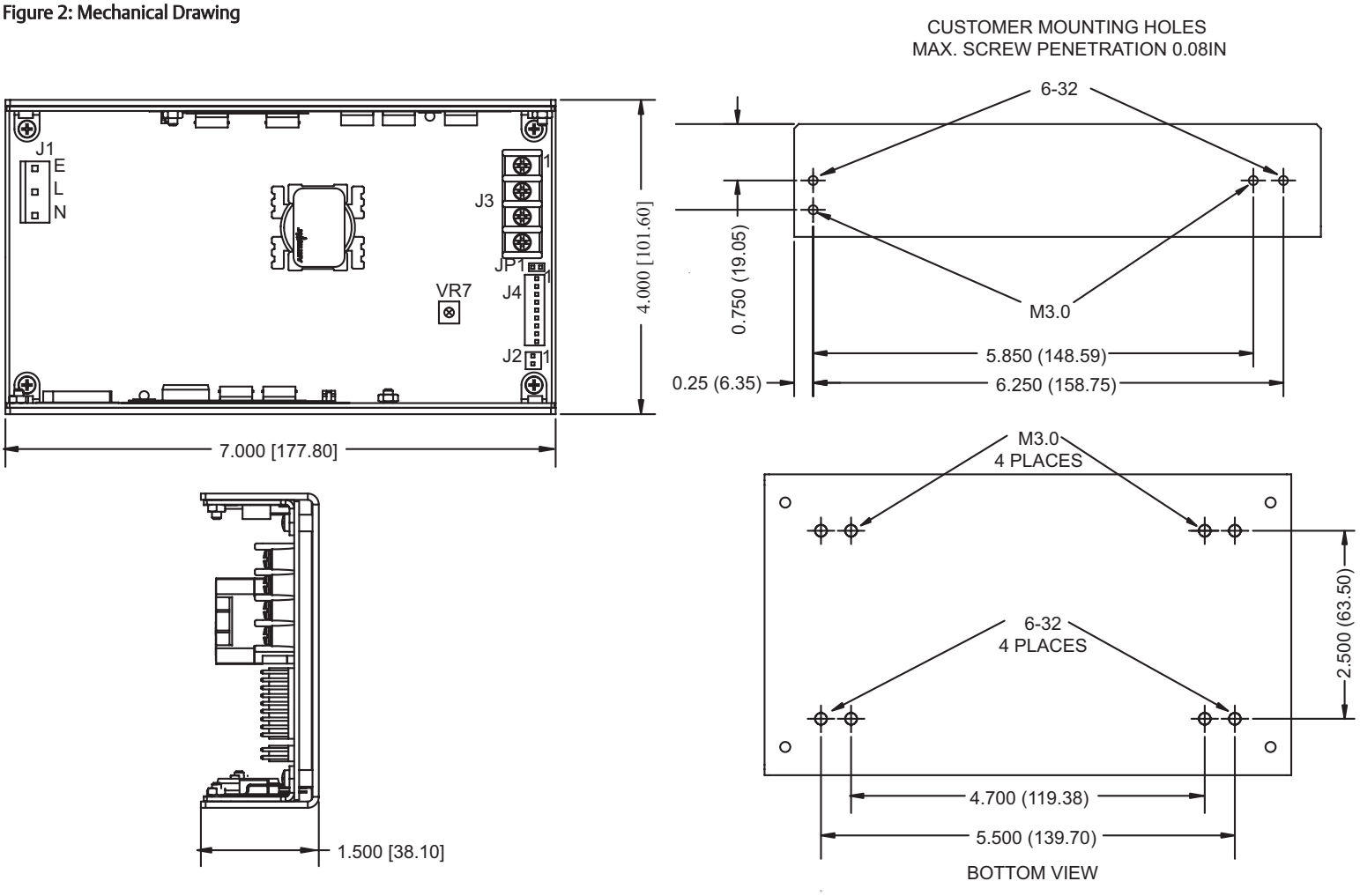


**Figure 1: Derating Curve**
**Output Power (Watts)**

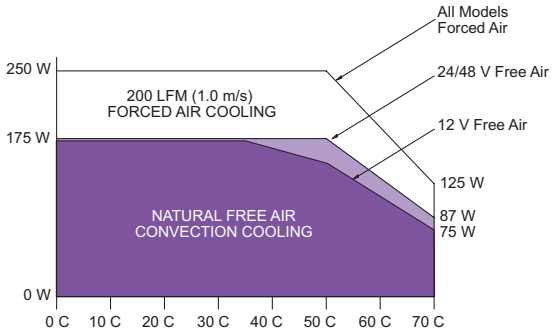
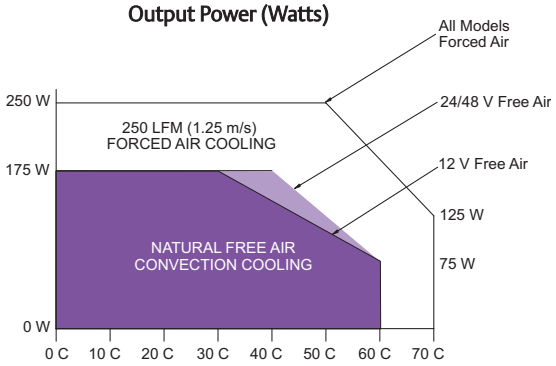



**Figure 1b: Derating Curve With Cover**
**Output Power (Watts)**




| Connector and Mating Connector Types | | |
|---|---|---|
| **Connector** | **Type** | **Mating Connector Type** |
| J1 | Molex 09-65-2058 (5273 series)void pins 2 and 4 or equivalent | Molex 09-52-4054 (5239 series) or equivalent with Molex 08-52-0072 (2478 series) or equivalent crimp terminals |
| J2 | Molex 22-23-2021 (6373 series) or equivalent | Molex 22-01-3027 (2695 series) or equivalent with Molex 08-50-01113 (2759 series) or equivalent crimp terminals |
| J3 | Molex terminal block 387007504 or equivalent | Terminal block contains #6-32 screw with clamp washer suitable for wire size 12-22 awg (0.5-2.5 $mm^2$). Max Torque tp 1.36 Nm (12 in.lb) |
| J4 | Molex 22-23-2091 (6373 series) or equivalent | Molex 22-01-3097 (2695 series) or equivalent with Molex 08-50-0113 (2759 series) or equivalent crimp terminals |

| J1 PIN CONNECTIONS | |
|---|---|
| Pin 1 | Ground/Earth |
| Pin 2 | Live |
| Pin 3 | Neutral |

| J2 PIN CONNECTIONS | | |
|---|---|---|
| Pin 1 | +12 V | Fan Voltage |
| Pin 2 | SGND | Return |

| J3 PIN CONNECTIONS | | |
|---|---|---|
| Pin 1 | Vo | +Main Output |
| Pin 2 | Vo | +Main Output |
| Pin 3 | RTN | Main Return |
| Pin 4 | RTN | Main Return |

| J4 PIN CONNECTIONS | | |
|---|---|---|
| Pin 1 | +S | +Vo Remote Sense |
| Pin 2 | -S | -Vo Remote Sense |
| Pin 3 | LS | Load Share Signal |
| Pin 4 | PS OFF | Remote ON/OFF signal NO |
| Pin 5 | PS ON | Remote ON/OFF signal NC |
| Pin 6 | SGND | Signal Common |
| Pin 7 | PW OK | Power Good |
| Pin 8 | 5 Vsb | Stand-by Voltage |
| Pin 9 | DC OK | DC Power Good Signal |

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