

# NLP70 Series

## Triple output

- Provides up to 10.5 A on either 3.3 V or 5 V
- 5.5 x 3.0 inch card and 1.26 inch package (1U applications)
- 3.3 V, 5 V and 12 V triple
- EN61000-3-2 compliant
- Overvoltage and short circuit protection
- EN55022, EN55011 conducted emissions level B
- EN61000-4-2, -3, -4, -5, -6 immunity compliant
- Mounting holes as per NLP65 series, easy upgrade
- Available RoHS compliant



CE (LVD)

2 YEAR WARRANTY

The NLP70-9693J is a 70 W (with forced air) universal input ac-dc power supply on a 5.5 x 3 inch card with a maximum component height of 1.26 inches for use in 1U applications. The model has input harmonic current correction making the series ideal for product designs that need to comply with EN61000-3-2 legislation. The NLP70 provides 52.5 W of output power with free air convection cooling which can be boosted to 70 W with 20 CFM of air. The NLP70, with full international safety approval and the CE mark, meets conducted emissions EN55022 level B and has immunity compliance to EN61000-4-2, -3, -4, -5, -6. The NLP70 series is designed for use in low power data networking, computer and telecom applications using 3.3 V or 5 V logic. The NLP70 can provide the same current on either the 3.3 V or 5 V channel making it ideal for applications using a mixture of 3.3V and 5V logic or for applications in transition from 5 V to 3.3 V logic.

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

### SPECIFICATIONS

#### OUTPUT SPECIFICATIONS

Total regulation (line and load)	3.3 V and 5 V 12 V	±2.0% ±5.0%
Rise time	At turn-on	1.0 s, max.
Transient response	Main output 25% step at 0.1 A/μs	5.0% or 250 mV max. dev., 1 ms max. recovery to 1.0%
Temperature coefficient		±0.02%/°C
Overvoltage protection	Main outputs	125%, ±10%
Short circuit protection	Cyclic operation	Continuous
Minimum output current		(See Note 6)

#### INPUT SPECIFICATIONS

Input voltage range	Universal input	90-264 Vac
Input frequency range		47-63 Hz
Input surge current (cold start)	120 Vac 230 Vac	17 A max. 32 A max.
Safety ground leakage current	120 Vac, 60 Hz 230 Vac, 50 Hz	0.7 mA 1.4 mA
Input current	120 Vac, with PFC 230 Vac, with PFC	1.05 A rms 0.55 A rms
Input fuse	UL/IEC127	250 Vac S 3.15 A

#### EMC CHARACTERISTICS (10)

Conducted emissions	EN55022, FCC part 15	Level B
Radiated emissions	EN55022, FCC part 15	Level A
ESD air	EN61000-4-2, level 3	
ESD contact	EN61000-4-2, level 4	
Surge	EN61000-4-5, level 3	
Fast transients	EN61000-4-4, level 3	
Radiated immunity	EN61000-4-3, level 3	
Conducted immunity	EN61000-4-6, level 3	

#### GENERAL SPECIFICATIONS

Hold-up time	120 Vac @ 60 Hz 230 Vac @ 50 Hz	16 ms @ 55 W 78 ms @ 55 W
Efficiency	120 Vac, 65 W	70% typical
Isolation voltage	Input/output Input/chassis	3000 Vac 1500 Vac
Switching frequency	Fixed	100 kHz, ±5 kHz
Approvals and standards (See Notes 8, 9)		EN60950, VDE0805 IEC950, UL1950 CSA C22.2 No. 950
Weight		300 g (10.7 oz)
MTBF	MIL-HDBK-217F	150,000 hours min.

#### ENVIRONMENTAL SPECIFICATIONS

Thermal performance (See Notes 1, 2, 3, 11)	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, 20 CFM forced air (See Note 10) Peak (0 °C to +50 °C, 60 s)	0 °C to +70 °C -40 °C to +85 °C Derate to 50% load 52.5 W 70 W See table
Relative humidity	Non-condensing	5% to 95% RH
Altitude	Operating Non-operating	10,000 feet max. 30,000 feet max.
Vibration (See Note 5)	5-500 Hz	2.4 G rms peak
Shock	per MIL-STD-810E	516.4 Part IV

# NLP70 Series

## Triple output

For the most current data and application support visit [www.artesyn.com/powergroup/products.htm](http://www.artesyn.com/powergroup/products.htm)

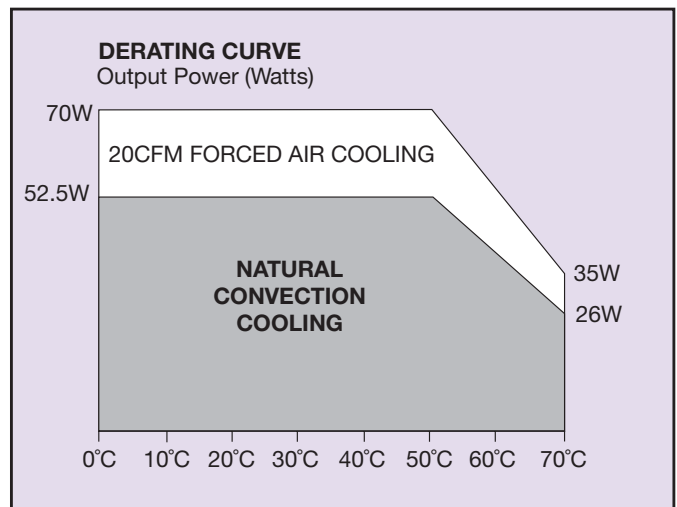
OUTPUT VOLTAGE	OUTPUT CURRENT			RIPPLE (4)	TOTAL REGULATION (6)	MODEL NUMBER (13,14)
	TYP. (1)	AIR (2)	PEAK (3)			
+5 V (I <sub>A</sub> )	10.5 A	13 A	14 A	50 mV	±2.0%	NLP70-9693J
+3.3 V (I <sub>B</sub> )	10.5 A	13 A	14 A	50 mV	±2.0%	
+12 V (I <sub>C</sub> )	0.65 A	0.8 A	0.8 A	120 mV	±5.0%	

### Notes

- Free air convection cooling.  
I<sub>5</sub> = 10.5 A max.; I<sub>3,3</sub> = 10.5 A max.; I<sub>3,3</sub> + I<sub>5</sub> < 10.6 A; P<sub>o</sub> = 52.5 W max.
- 20 CFM forced air.  
I<sub>3,3</sub> = 13 A max.; I<sub>5,5</sub> = 13 A max.; I<sub>3,3</sub> + I<sub>5</sub> < 15 A; P<sub>o</sub> = 70 W max.
- Peak output current lasting less than 60 seconds with duty cycle less than 5%. During peak loading, output voltage may exceed total regulation limits.
- Figure is peak-to-peak for convection power rating. Output noise measurements are made across a 20 MHz bandwidth using a 6 inch twisted pair, terminated with a 10 µF electrolytic capacitor and a 0.1 µF ceramic capacitor.
- Three orthogonal axes, random vibration 10 minutes for each axes, 2.4 G rms 5 Hz to 500 Hz.
- To maintain stated regulation then:  
I<sub>12</sub> / I<sub>A</sub> ≤ 2 and I<sub>A</sub> ≥ 0.1 A.
- For optimum reliability, no part of the heatsink should exceed 120 °C, and no semiconductor case temperature should exceed 130 °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.
- Conducted and radiated emissions testing were performed using the standard EN55022 set-up with a stand alone NLP70-9693J unit placed on a grounded metal plate with a line choke on the AC input and ground wires (i.e. the wires are looped through an EMI suppression toroid). For system compliance it is usually necessary to install an 'off-the-shelf' ac inlet with an integral line filter in the system chassis or to install a line choke on the input wires as close as possible to ac entry point of the system chassis. Please contact the applications group at Artesyn for assistance with EMI compliance.
- All models require a minimum mounting stand-off of 0.25 inches (6.35 mm) in the end use product.
- 12 V is a floating output and can be referenced negative or positive.
- The 'J' suffix indicates that these parts are Pb-free (RoHS 6/6) compliant. TSE RoHS 5/6 (non Pb-free) compliant versions may be available on special request, please contact your local sales representative for details.
- 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.

INPUT PIN CONNECTIONS	
J1	
Pin 1	AC Line
Pin 2	No Pin
Pin 3	AC Neutral
J2	
Pin 1	Safety Ground

OUTPUT PIN CONNECTIONS	
J5 FUNCTION	
Pin 1	3.3V
Pin 2	3.3V
Pin 3	Return
Pin 4	Return
Pin 5	Return
Pin 6	5V
Pin 7	5V
J3 FUNCTION	
Pin 1	12V Return
Pin 2	12V (I <sub>C</sub> )



# NLP70 Series

Triple output

LOW TO MEDIUM POWER AC/DC POWER SUPPLIES | 70 W AC/DC Universal Input Switch Mode Power Supplies

3

For the most current data and application support visit [www.artesyn.com/powergroup/products.htm](http://www.artesyn.com/powergroup/products.htm)

### Input and output connectors

**AC (J1) connector type**  
Molex 26-60-4030 type.

**DC (J3) connector type**  
Molex 26-60-4020 type.

**DC (J5) connector type**  
Molex 26-60-4070 type.

**Note:** The input and output connectors are the same as those used on NFS40, NAL40, NAN40, NLP40 and NLP65.

**Earth (J2) connector type**  
Male 0.250 quick disconnect type.

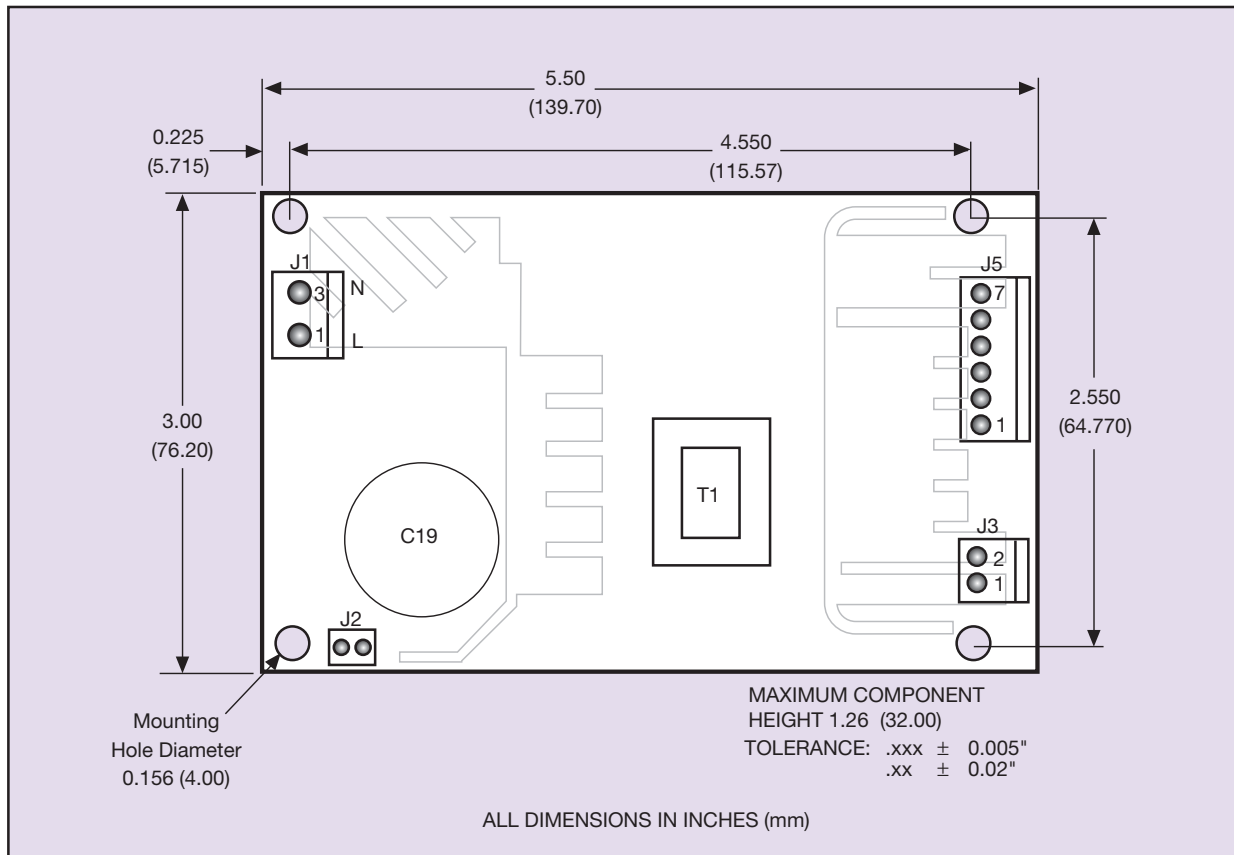
### Mating connectors

**AC (J1) mating connector type**  
Molex 09-50-3031 or equivalent with Molex 08-50-0105 or equivalent crimp terminals.

**DC (J3) mating connector type**  
Molex 09-50-3021 with Molex 2478 phosphor bronze crimp terminals or equivalent.

**DC (J5) mating connector type**  
Molex 09-50-3071 with Molex phosphor bronze crimp terminals or equivalent.

**Earth (J2) mating connector type**  
Molex 90028.



### International Safety Standard Approvals



VDE0805/EN60950/IEC950 File No. 10401-3336-0143  
Licence No. 117595



UL1950 File No. E136005



CSA C22.2 No. 950 File No. LR41062

Datasheet © Artesyn Technologies® 2005

The information and specifications contained in this datasheet 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.