NLP70 Series

Triple output

ARTESYN TECHNOLOGIES

- **Provides up to 10.5A on either 3.3V or 5V**
- **5.5 x 3.0 inch card and 1.26 inch package (1U applications)**
- **3.3V, 5V and 12V 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**



The NLP70-9693 is a 70W (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 52.5W of output power with free air convection cooling which can be boosted to 70W with 20CFM 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 3.3V or 5V logic. The NLP70 can provide the same current on either the 3.3V or 5V channel making it ideal for applications using a mixture of 3.3V and 5V logic or for applications in transition from 5V to 3.3V logic.

CE (LVD)

2 YEAR WARRANTY

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

SPECIFICATIONS

OUTPUT SPECIFICATIONS

Total regulation (line and load)	3.3V and 5V 12V	±2.0% ±5.0%
Rise time	At turn-on	1.0s, max.
Transient response	Main output 25% step at 0.1A/µs	5.0% or 250mV max. dev., 1ms 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 to 264VAC
Input frequency range		47Hz to 63Hz
Input surge current (cold start)	120VAC 230VAC	17A max. 32A max.
Safety ground leakage current	120VAC, 60Hz 230VAC, 50Hz	0.7mA 1.4mA
Input current	120VAC, with PFC 230VAC, with PFC	1.05A rms 0.55A rms
Input fuse	UL/IEC127	250VAC S 3.15A

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	120VAC @ 60Hz 230VAC @ 50Hz	16ms @ 55W 78ms @ 55W
Efficiency	120VAC, 65W	70% typical
Isolation voltage	Input/output Input/chassis	3000VAC 1500VAC
Switching frequency	Fixed	100kHz, ±5kHz
Approvals and standards (See Notes 8, 9)		EN60950, VDE0805 IEC950, UL1950 CSA C22.2 No. 950
Weight		300g (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)	0°C to +70°C
	Non-operating	-40°C to +85°C
	50°C to 70°C ambient, convection cooled	Derate to 50% load
	0°C to 50°C ambient, convection cooled	52.5W
	0°C to 50°C ambient, 20CFM forced air (See Note 10)	70W
	Peak (0°C to +50°C, 60s)	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)	5Hz to 500Hz	2.4G rms peak
Shock	per MIL-STD-810E	516.4 Part IV

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ARTESYN TECHNOLOGIES

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

OUTPUT VOLTAGE	OUTPUT CURRENT			RIPPLE (4)	TOTAL REGULATION (6)	MODEL NUMBER
	TYP. (1)	AIR (2)	PEAK (3)			
+5V (I_A)	10.5A	13A	14A	50mV	±2.0%	NLP70-9693
+3.3V (I_B)	10.5A	13A	14A	50mV	±2.0%	
+12V (12)	0.65A	0.8A	0.8A	120mV	±5.0%	

Notes

1 Free air convection cooling.
I_5 = 10.5A max.; $I_{3.3}$ = 10.5A max.; $I_{3.3} + I_5$ < 10.6A; Po = 52.5W max.

2 20CFM forced air.
$I_{3.3}$ = 13A max.; $I_{5.5}$ = 13A max.; $I_{3.3} + I_5$ < 15A; Po = 70W max.

3 Peak output current lasting less than 60 seconds with duty cycle less than 5%. During peak loading, output voltage may exceed total regulation limits.

4 Figure is peak-to-peak for convection power rating. Output noise measurements are made across a 20MHz bandwidth using a 6 inch twisted pair, terminated with a 10µF electrolytic capacitor and a 0.1µF ceramic capacitor.

5 Three orthogonal axes, random vibration 10 minutes for each axes, 2.4G rms 5Hz to 500Hz.

6 To maintain stated regulation then:
$I_{12} / I_{(A)} \leq 2$ and $I_{(A)} \geq 0.1$A.

7 For optimum reliability, no part of the heatsink should exceed 120˚C, and no semiconductor case temperature should exceed 130˚C.

8 CAUTION: Allow a minimum of 1 second after disconnecting line power when making thermal measurements.

9 This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.

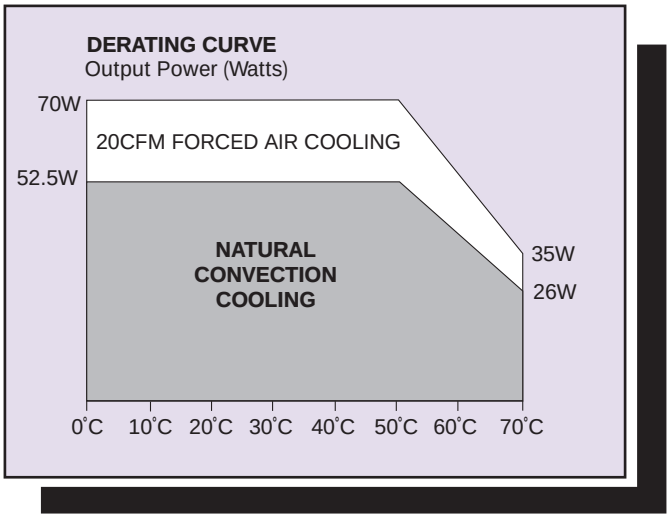
10 Conducted and radiated emissions testing were performed using the standard EN55022 set-up with a stand alone NLP70-9693 unit placed on a grounded metal plate with a line choke on the AC input and ground wires (i.e. the wires are looped through an EMI suppression toroid). For system compliance it is 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.

11 All models require a minimum mounting stand-off of 0.25 inches (6.35mm) in the end use product.

12 12V is a floating output and can be referenced negative or positive.

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 (12)



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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.

Mating connectors

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

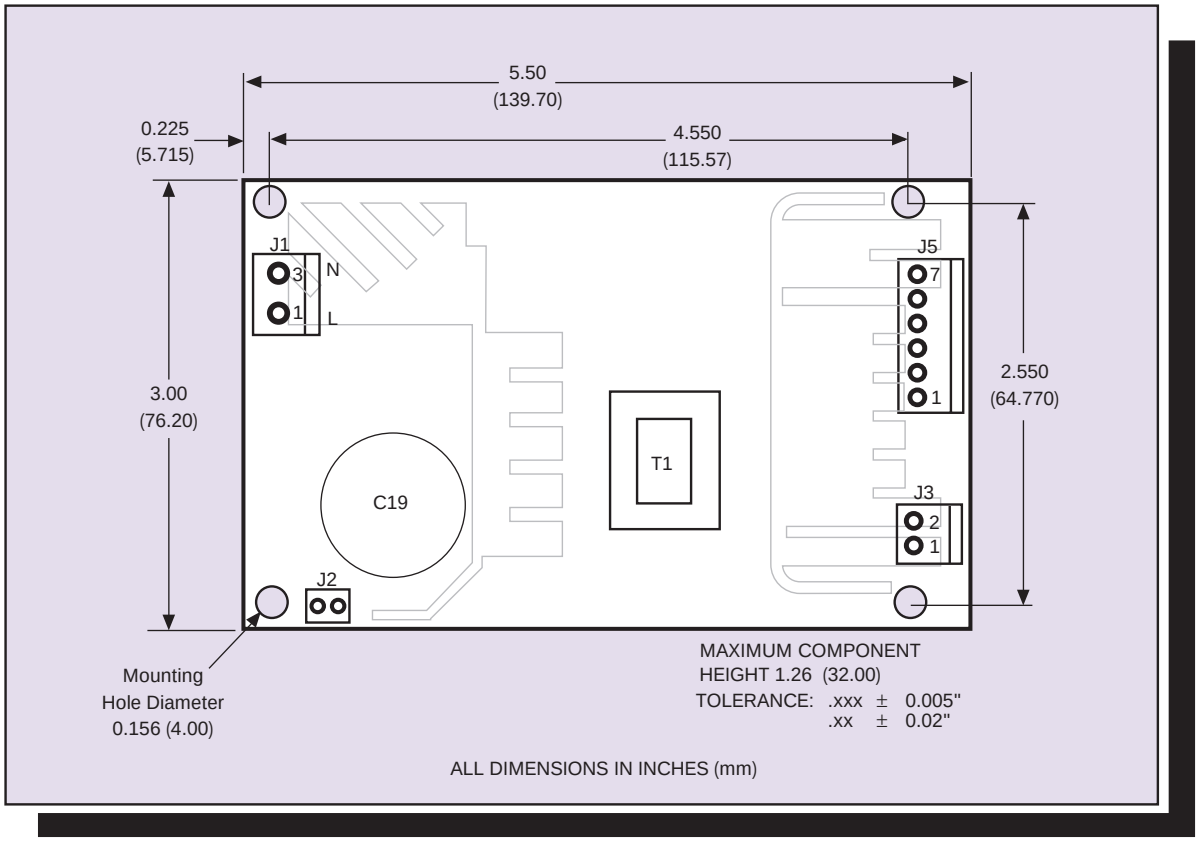
DC (J3) mating connector type
Molex 09-50-3021 with Molex 2478 phosphor bronze crimp terminals or equivalent.

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

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.

Earth (J2) mating connector type
Molex 90028.



International Safety Standard Approvals

VDE0805/EN60950/IEC950

UL1950 approval pending

CSA C22.2 No. 950 approval pending

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