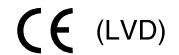


# NLS110-9602J

## Quad output

- 7.0 x 4.25 x 1U package
- Overvoltage and short circuit protection
- 110 W with 20 CFM
- 90 Vac to 264 Vac universal input range
- EN55022 conducted emissions level B, radiated emissions level A
- UL, VDE and CSA safety approvals
- CE mark
- Available RoHS compliant



2 YEAR WARRANTY

The NLS110-9602J is a 110 W universal input ac-dc power supply on a 7 x 4.25 inch card. The NLS110-9602J has proven itself to be highly reliable and versatile product for a wide range of communication and industrial applications, with a very high peak current capability on each output for drive and motor applications. The NLS110-9602J provides 80 W of output power with free air convection cooling which can be boosted to 110 W with 20 CFM of air. Standard features include overvoltage and short circuit protection. The NLS110-9602J with full international safety approval and the CE mark, meets conducted emissions EN55022 level B. The NLS110-9602J is designed for use in low power data networking, computer, telecom and industrial applications such as servers, thermal printers, storage devices, vending machines and POS equipment.

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

### SPECIFICATIONS

#### OUTPUT SPECIFICATIONS

Total regulation	Line and load	(See table)
Rise Time	At turn-on	1.0 s, max.
Transient response		(See table)
Temperature coefficient		±0.02%/°C
Overvoltage protection	+5.1 V	125%, ±10%
Short circuit protection	Cyclic operation	Yes with auto recovery

#### INPUT SPECIFICATIONS

Input voltage range	Universal input	90-264 Vac
Input frequency range		47-440 Hz
Input surge current (cold start)	120 Vac 230 Vac	18 A max. 35 A max.
Safety ground leakage current	120 Vac, 60 Hz 230 Vac, 50 Hz	0.45 mA 0.75 mA
Input current	120 Vac @ 80 W 120 Vac @ 110 W 230 Vac @ 80 W 230 Vac @ 110 W	0.95 A rms 1.35 A rms 0.53 A rms 0.75 A rms
Input fuse	UL/IEC127	F3.15A H, 250 Vac

#### EMC CHARACTERISTICS (11)

Conducted emissions	EN55022, FCC part 15	Level B
Radiated emissions	EN55022, FCC part 15	Level A
Harmonic current emission correction	EN61000-3-2	Compliant
ESD air	EN61000-4-2	Level 3
ESD contact	EN61000-4-2	Level 3
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	35 ms @ 80 W 25 ms @ 110 W
Efficiency	120 Vac @ 110 W	70% min.
Isolation voltage	Input/output Input/chassis	3000 Vac 1500 Vac
Approvals and standards	EN60950, VDE0805, IEC950 UL1950, CSA C22.2 No. 950	
Weight	383 g (13.5 oz.)	
MTBF (@ 25 °C)	MIL-HDBK-217F	220,000 hours min.

#### ENVIRONMENTAL SPECIFICATIONS (6,8)

Thermal performance	Operating ambient, (see derating curve) Non-operating +50 °C to +70 °C, amb. convection cooled 0 °C to +50 °C, amb. convection cooled 0 °C to +50 °C ambient, 150 LFM forced air Peak (0 °C to +50 °C, 60 s) (See Note 4)	0 °C to +50 °C -40 °C to +85 °C Derate to 50% load 80 W 110 W
Relative humidity	Non-condensing	5% to 95% RH
Altitude	Operating Non-operating	10,000 feet max. 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

# NLS110-9602J

## Quad output

LOW TO MEDIUM POWER AC/DC POWER SUPPLIES | 80-110 W AC/DC Universal Input Switch Mode Power Supplies | 2

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

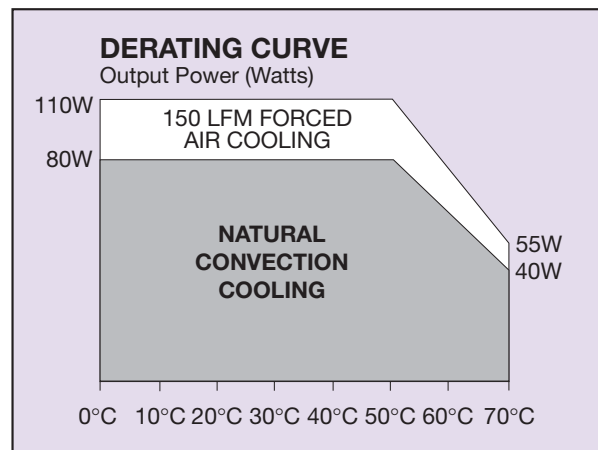
OUTPUT VOLTAGE	OUTPUT CURRENTS			RIPPLE (4)	TOTAL REGULATION (5)	MODEL NUMBERS (12,13,14)
	MAX (1)	PEAK (2)	FAN (3)			
+5.1 V	8 A	20 A	10 A	50 mV	±2.0%	NLS110-9602J
+24 V	3.5 A	4.5 A	4.5 A	240 mV	±5.0%	
+12 V	4.5 A	9 A	5 A	120 mV	±3.0%	
-12 V	0.5 A	1.5 A	1 A	120 mV	±3.0%	

### Notes

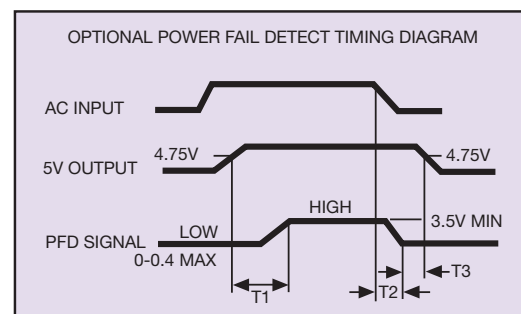
- Convection cooled, 80 W maximum.
- Peak outputs lasting less than 60 seconds with duty cycle less than 10%. Total peak power must not exceed 110 W.
- Forced air, 20 CFM at 1 atmosphere, 110 W maximum.
- Amplitude is peak-to-peak. Output ripple is measured across a 20 MHz bandwidth using a 12 inch twisted pair terminated with a 10  $\mu$ F capacitor.
- Total regulation is defined as the static output regulation at 25 °C, including initial tolerance, line voltage within stated limits and output voltages adjusted to their factory settings.
- Derating curve is application specific for ambient temperatures >50 °C.
- Three orthogonal axes, random vibration, 10 minute test for each axis.
- For optimum reliability no part of the heatsink should exceed 100 °C and no semiconductor case temperature should exceed 115 °C.
- Caution: Allow a minimum of 1 second after disconnecting the 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.
- 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 is required during conducted emissions testing but some applications may require additional filtering to achieve system compliance. A line choke, (ac input cords looped twice through an EMI suppression toroid) was used during radiated emissions testing. Considerable radiated testing in 1U six-sided boxes has shown that units can meet level B in typical systems. Application support is available from the factory to assist with EMI compliance.
- Requires a minimum mounting stand-off of 6.35 mm (0.25 inches) in the end use product.
- 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.

### TRANSIENT RESPONSE

Model	Output Voltage (Load)	Transient Response
NLS110-9602J	+5.1 V (7.5 A to 10 A)	150 mV peak, 1 ms recovery
	+24 V (1.5 A to 3 A)	300 mV peak, 1 ms recovery
	+12 V (2.5 A to 5 A)	100 mV peak, 0.5 ms recovery
	-12 V (0.5 A to 1 A)	100 mV peak, 0.5 ms recovery



OUTPUT PIN CONNECTIONS		INPUT PIN CONNECTIONS	
J2	FUNCTION	J1	
Pin 1	+5.1 V	Pin 1	AC Neutral
Pin 2	+5.1 V	Pin 2	No Connection
Pin 3	Return	Pin 3	AC Line
Pin 4	Return	J4	
Pin 5	Return	Pin 1	Safety Earth
Pin 6	Return		
Pin 7	+12 V		
Pin 8	+12 V		
Pin 9	+24 V		
Pin 10	PFD		
Pin 11	-12 V Return		
Pin 12	-12 V		



### Power fail detect signal

50 ms  $\leq$  T1  $\leq$  200 ms  
T2 will vary with line and load  
T3  $\geq$  3 ms  
Pout: 110 W  
PFD output is an open collector which will sink  $\leq$  40 mA in the low state.

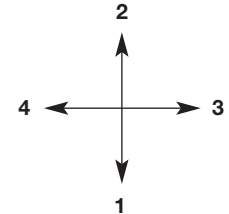
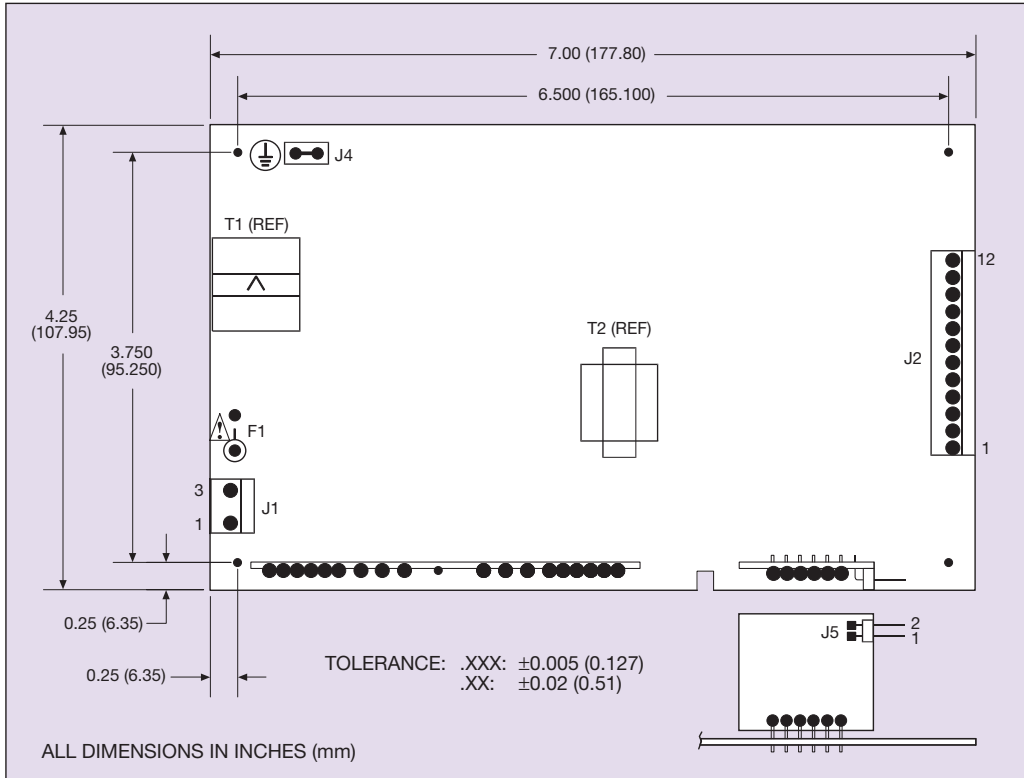
# NLS110-9602J

## Quad output

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### Mechanical Notes

A All dimensions are in inches (mm).



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

- 1 Optimum.
- 2 Very good.
- 3 Not recommended.
- 4 Not recommended.

### Input and output connectors

#### AC (J1) connector type

Molex 26-60-4030 or equivalent.

#### DC (J2) connector type

12 position Molex Spox type 26-48-1125 or equivalent.

#### Earth (J4) connector type

Male 0.250 quick disconnect.

### Mating connectors

#### AC (J1) mating connector type

Molex 09-50-3031 or equivalent with Molex 08-50-0105 or equivalent crimp terminals.

#### DC (J2) mating connector type

Molex Spox type 26-03-3121 and contact 08-52-0113.

#### Earth (J4) mating connector type

Molex 90028.

### International Safety Standard Approvals



VDE0805/EN60950/IEC950/IEC1010 File No. 10401-3336-0186  
Licence No.130253



UL1950 File No. E136005



CSA C22.2 No. 950 File No. LR41062C

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

[www.artesyn.com](http://www.artesyn.com)