

NLS110-9602

Quad output



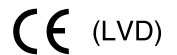
LOW TO MEDIUM POWER AC/DC POWER SUPPLIES

80-110W AC/DC Universal Input Switch Mode Power Supplies

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

The NLS110-9602 is a 110W universal input AC/DC power supply on a 7 x 4.25 inch card. The NLS110-9602 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 NLS110-9602 provides 80W of output power with free air convection cooling which can be boosted to 110W with 20CFM of air. Standard features include overvoltage and short circuit protection. The NLS110-9602 with full international safety approval and the CE mark, meets conducted emissions EN55022 level B. The NLS110-9602 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.



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

INPUT SPECIFICATIONS

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

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	120VAC @ 60Hz	35ms @ 80W 25ms @ 110W
Efficiency	120VAC @ 110W	70% min.
Isolation voltage	Input/output Input/chassis	3000VAC 1500VAC
Approvals and standards		EN60950, VDE0805, IEC950 UL1950, CSA C22.2 No. 950
Weight		383g (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, 150LFM forced air Peak (0°C to +50°C, 60s)	0°C to +50°C -40°C to +85°C Derate to 50% load 80W 110W (See Note 4)
Relative humidity	Non-condensing	5% to 95% RH
Altitude	Operating Non-operating	10,000 feet max. 30,000 feet max.
Vibration (See Note 7)	5Hz to 500Hz	2.4G rms peak
Shock	per MIL-STD-810E	516.4 Part IV

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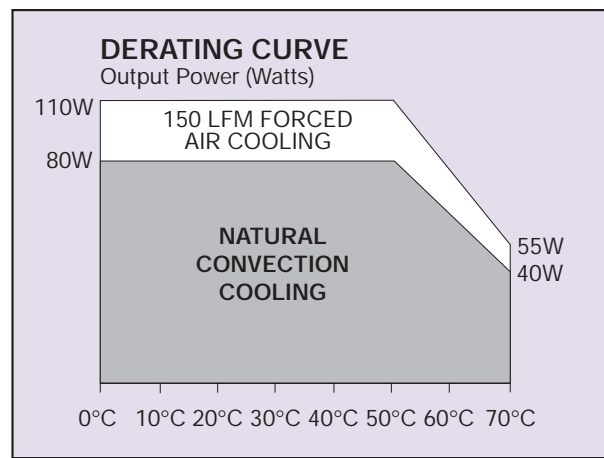
OUTPUT VOLTAGE	OUTPUT CURRENTS			RIPPLE (4)	TOTAL REGULATION (5)	MODEL NUMBERS
	MAX (1)	PEAK (2)	FAN (3)			
+5.1V	8.0A	20.0A	10.0A	50mV	±2.0%	NLS110-9602 (12)
+24.0V	3.5A	4.5A	4.5A	240mV	±5.0%	
+12.0V	4.5A	9.0A	5.0A	120mV	±3.0%	
-12.0V	0.5A	1.5A	1.0A	120mV	±3.0%	

Notes

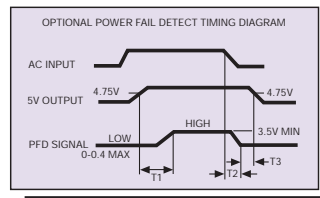
- Convection cooled, 80W maximum.
- Peak outputs lasting less than 60 seconds with duty cycle less than 10%. Total peak power must not exceed 110W.
- Forced air, 20CFM at 1 atmosphere, 110W maximum.
- Amplitude is peak-to-peak. Output ripple is measured across a 20MHz bandwidth using a 12 inch twisted pair terminated with a 10µF 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 6.35mm (0.25 inches) in the end use product.

TRANSIENT RESPONSE

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



OUTPUT PIN CONNECTIONS		INPUT PIN CONNECTIONS	
J2	FUNCTION	J1	
Pin 1	+5.1V	Pin 1	AC Neutral
Pin 2	+5.1V	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	+12V		
Pin 8	+12V		
Pin 9	+24V		
Pin 10	PFD		
Pin 11	-12V Return		
Pin 12	-12V		



Power fail detect signal

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

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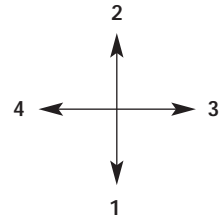
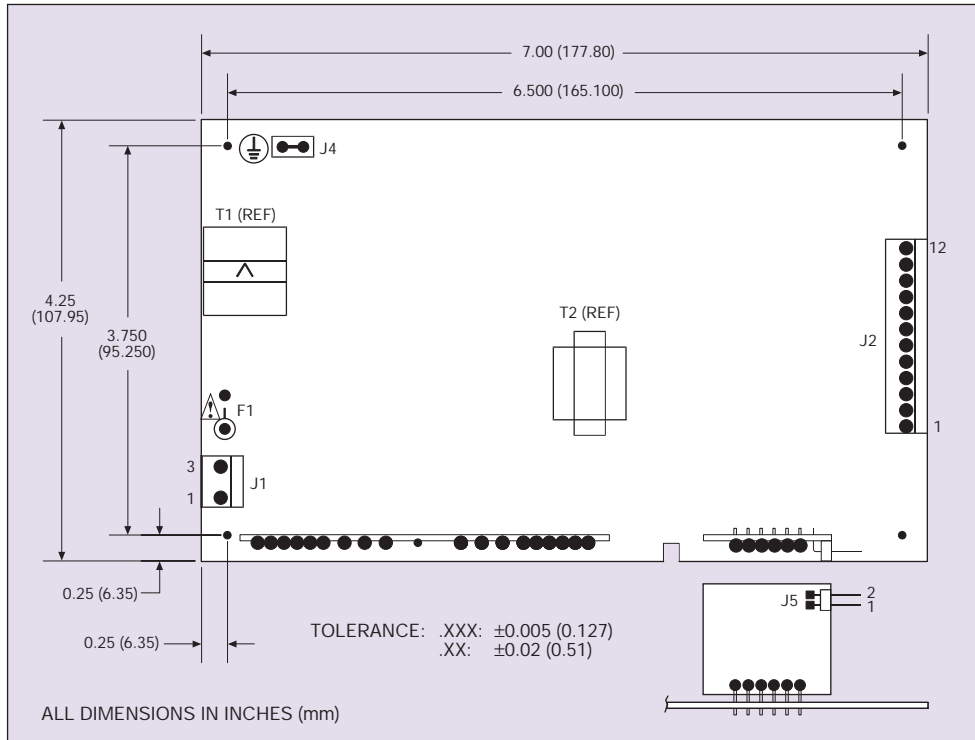
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Mechanical Notes

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. 10401-3336-1049
Licence No. 2874, 1653 and 1049

UL1950 File No. E136005

CSA C22.2 No. 950 File No. LR41062C

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