

NLP150 SERIES

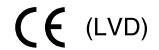
Single, dual, triple and quad output

Recommended for new design-ins - PRELIMINARY DATA Revised 27/5/97

- Compliance to EN61000-3-2
- 90VAC to 264VAC universal input range
- UL, CSA, VDE and BABT safety approvals
- Overvoltage, overload and short circuit protection
- CE-Marked to LVD
- EN55022-B, EN55011-B conducted noise
- VDE0871-A, EN55022-A, EN55011-A radiated noise
- Meets all applicable and relevant immunity standards EN61000-4-2,4,5 and ENV50140/1



2 YEAR WARRANTY



The smallest 150 Watt open frame power supply with input harmonic correction in the industry, combines performance, features and value. Each characteristic of the NLP150 has been carefully thought out to add value to your system. Specific target markets are Networking systems, covering hubs, routers and ATM; Computer Peripherals, including DAT and modems; and Communications systems such as video-conferencing and

PABX. Value adding features such as conducted noise performance to EN55022-B and noise immunity compliance to EN61000-4-2,4,5 level 3 and ENV50140/1 level 3 compliment benefits such as long life, simplified design-in and small system size.

SPECIFICATION

ALL SPECIFICATIONS ARE TYPICAL AT NOMINAL INPUT, FULL LOAD AND 25°C UNLESS OTHERWISE STATED

OUTPUT SPECIFICATIONS		
Total regulation (Line and load)	Single outputs	±2.0%
	Main: Multiple outputs (1 & 2)	±2.0%
	Auxiliary outputs	±5.0%
Rise time	At turn-on	250ms, max.
Transient response	Main output	5.0% or 250mV
	25% step at 0.1A/μs	max. dev., 1ms max. recovery to 1%
Temperature coefficient		±0.02%/°C
Overvoltage protection	Single outputs and multi outputs 1 & 2	125% of nominal ±10% tolerance
Short circuit protection		Yes, indefinite
Minimum output current		Yes, see table
Remote sense	Outputs 1 & 2	0.5V max. IR drop
INPUT SPECIFICATIONS		
Input voltage range	Universal input,	90 to 264VAC
Input frequency range		47Hz to 63Hz
Input surge current (cold start)	120VAC	19A max.
	230VAC	38A max.
Safety ground leakage current	120VAC, 60Hz	0.7mA
	230VAC, 50Hz	1.4mA
Input current	120VAC	2.4A max.
Input fuse	UL/CSA approved	H 250VAC F 6.3A
ELECTROMAGNETIC COMPATIBILITY SPECIFICATIONS (7)		
Radiated noise	EN55022/11, FCC part 15	Level A
Conducted noise	EN55022/11, FCC part 15	Level B
Electrostatic discharge	EN61000-4-2	Level 3
Electrical fast transients/bursts	EN61000-4-4	Level 3

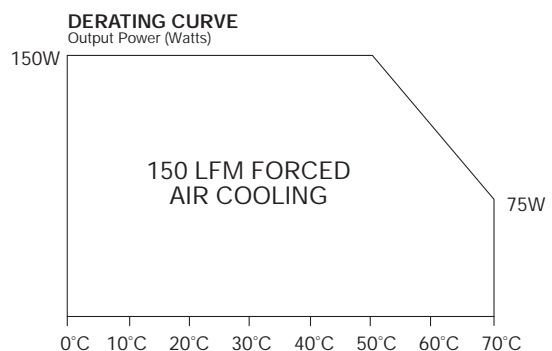
ELECTROMAGNETIC COMPATIBILITY SPECIFICATIONS (7)		
Surge susceptibility	EN61000-4-5	Level 3
RF field susceptibility	ENV50140	Level 3
RF conducted disturbance	ENV50141	Level 3
GENERAL SPECIFICATIONS		
Hold-up time	120VAC, 60Hz	16ms @ 150W
Efficiency		72% typical
Isolation voltage	Input/output Input/chassis	3000VAC 1500VAC
Switching frequency	Fixed	100kHz, ±10kHz
Approvals and standards		EN60950, UL1950, CSA 22.2-234/950, BS6301
Weight	Open-frame, 2U	680g (24 oz)
	With cover & fan	900g (31.77 oz)
Size	Open-frame, 2U	3.0 x 6.5 x 3.06 in.
	With cover & fan	3.0 x 7.50 x 3.10 in.
MTBF (@ 25°C)	MIL-HDBK-217F1	> 200,000 hours
ENVIRONMENTAL SPECIFICATIONS		
Thermal performance	0°C to +50°C ambient,	150W
	150LFM forced air	
	Non-operating	-40°C to +85°C
	+50°C to +70°C, 150LFM forced air	Derate to 50% load
	Peak (0°C to +50°C, 60s)	See Note 2
Relative humidity	Non-condensing	5% to 95% RH
Altitude	Operating	10,000 feet max.
	Non-operating	30,000 feet max.
Vibration, See Note 4	5Hz to 500Hz	2.4G rms peak
Shock	per MIL-STD-810E	516.4 Part IV

150 Watt AC/DC universal input switch mode power supplies

OUTPUT VOLTAGE	OUTPUT CURRENT			RIPPLE (3)	TOTAL REGULATION	MODEL NUMBERS (8,9)
	MIN	MAX (1)	PEAK (2)			
5V	3A	30A	36A	50mV	±2.0%	NLP150H-9605
12V	1.25A	12.5A	15A	120mV	±2.0%	NLP150H-9612
13.8V	1.1A	11A	13A	120mV	±2.0%	NLP150H-9614
24V	0.63A	6.3A	7.5A	240mV	±2.0%	NLP150H-9624
48V	0.32A	3.2A	3.75A	480mV	±2.0%	NLP150H-9617
5V	1.5A	15A	18A	50mV	±2.0%	NLP150H-9690
3.3V	1.5A	15A	18A	50mV	±2.0%	
5V	1.5A	15A	18A	50mV	±2.0%	NLP150H-9608
12V	0.63A	6.3A	7.5A	120mV	±2.0%	
-12V	0A	0.8A	1.0A	120mV	±5.0%	
5V	1.5A	15A	18A	50mV	±2.0%	NLP150H-9610
15V	0.5A	5A	6A	150mV	±2.0%	
-15V	0A	0.8A	1.0A	150mV	±5.0%	
5V	1.5A	15A	18A	50mV	±2.0%	NLP150H-9691
3.3V	1.2A	12A	15A	50mV	±2.0%	
12V	0A	1.25A	1.25A	120mV	±5.0%	
-12V	0A	0.8A	1.0A	120mV	±5.0%	
5V	1.5A	15A	18A	50mV	±2.0%	NLP150H-9602
12V	0.63A	6.3A	7.5A	120mV	±2.0%	
24V	0A	0.8A	1.0A	120mV	±5.0%	
-12V	0A	0.8A	1.0A	240mV	±5.0%	

Notes

- 150LFM forced air cooling (150W 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. Output noise measurements are made across a 20MHz bandwidth using a 12" twisted pair, terminated with a 47µF capacitor.
- Three orthogonal axes, random vibration 10 minutes for each axes, 2.4G rms 5Hz to 500Hz.
- 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.
- For EMI compliance, a ground choke may be required before connecting the ground wire to the chassis.
- To order the NLP150 with an enclosure, add the suffix 'E' to the model number e.g. **NLP150H-96xxE**.
- For single output models, J2 and J3 must be connected in parallel for proper operation.



International Safety Standard Approvals



VDE0805/EN60950/IEC950 received Statement of Conformance



UL1950 File No. E136005



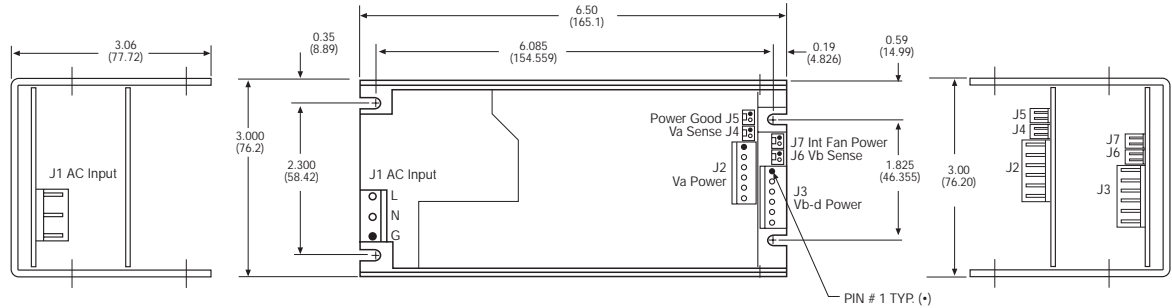
CSA22.2-234/950 File No. LR50913



Designed to meet, approval pending

150 Watt AC/DC universal input switch mode power supplies

Open-frame mechanical drawing



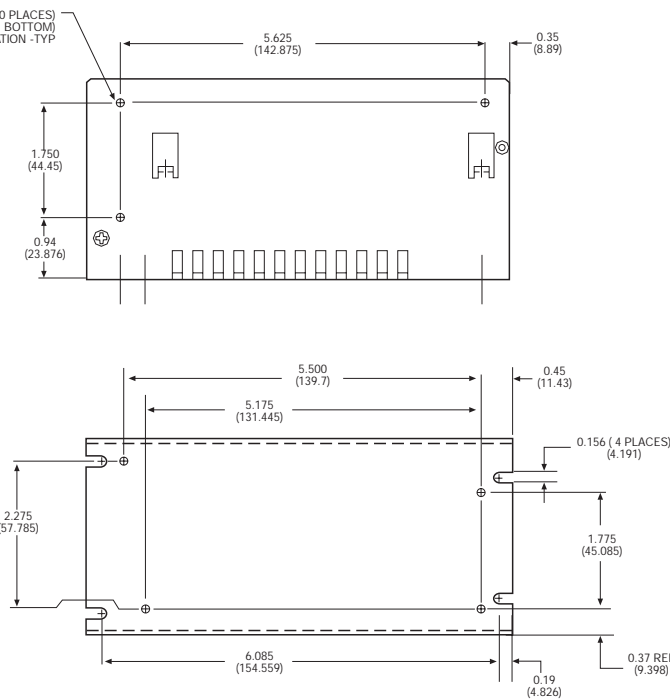
Va is the first output
Vb is the second output
Vc is the third output
Vd is the fourth output.



Input pin assignment (J1) (Open-frame only)

Standard 5-pin Molex Spox type connector with 0.156" spacing (P/N: 09-74-1031) or equivalent are used for input connectors. The pin assignment is summarized below. Pin numbering is from right to left facing the connector.

INPUT PIN CONNECTIONS	
J1	
Pin 1	Ground
Pin 2	No Pin
Pin 3	Neutral (AC Low)
Pin 4	No Pin
Pin 5	Line (AC High)



ALL DIMENSIONS IN INCHES (mm)

Tolerances unless otherwise specified
.xx = ± 0.02
.xxx = ± 0.010

Output pin assignment (J2, J3)

Two standard 6-pin Molex Spox type connectors with 0.156" spacing (P/N: 09-74-1061) or equivalent are used for power output connectors. The pin assignment is summarized below. Pin numbering is from right to left facing the connector. For single output models, J2 and J3 must be connected in parallel for proper operation.

PIN CONNECTIONS	
J2 (All models)	
Pin 1	Va
Pin 2	Va
Pin 3	Va
Pin 4	Return
Pin 5	Return
Pin 6	Return

OUTPUT PIN CONNECTIONS				
J3	SINGLE	DUAL	TRIPLE	QUAD
Pin 1	Va	Vb	Vc	Vd
Pin 2	Va	Vb	Vb	Vb
Pin 3	Va	Vb	Vb	Vb
Pin 4	Return	Return	Return	Return
Pin 5	Return	Return	Return	Return
Pin 6	Return	Return	No Pin	Vc

Signal pin assignment (J4, J5, J6)

Three two-pin Molex 6373 type connectors (P/N: 22-23-2021) with 0.100" spacing or equivalent are used for remote sensing and power good signal. The pin assignment is summarized in the following tables. Pin numbering is from right to left facing the connector.

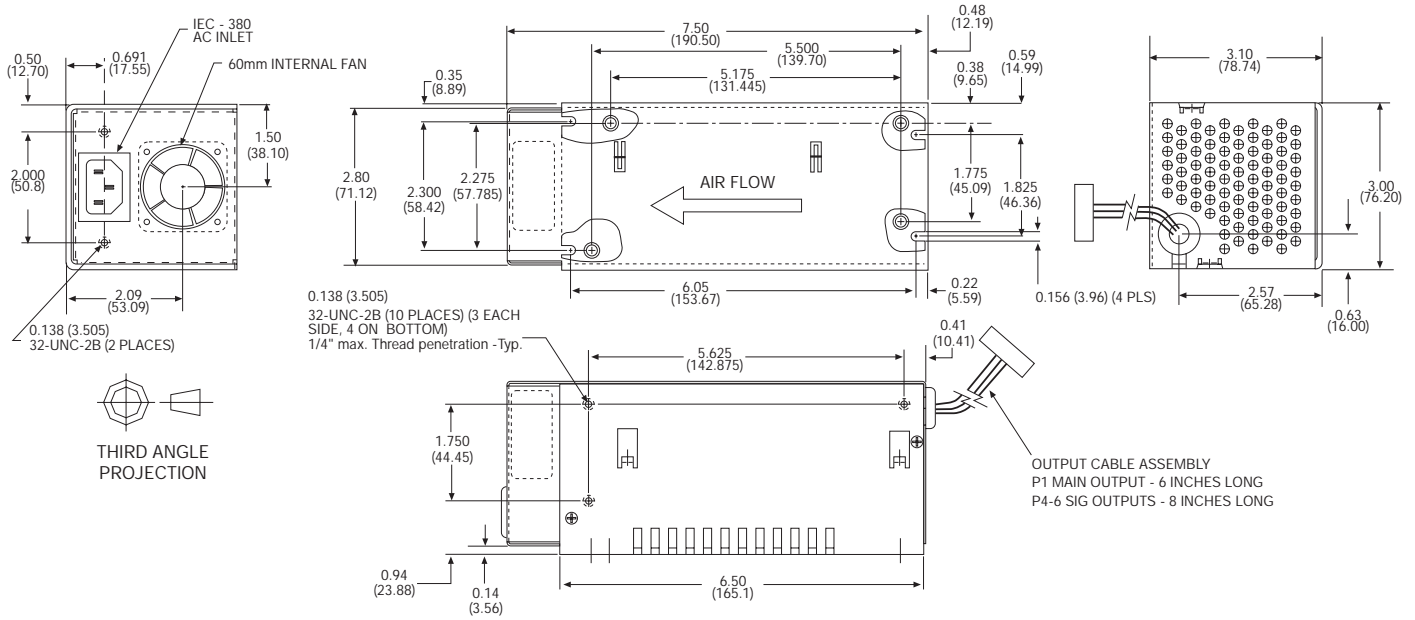
PIN CONNECTIONS	
J4 (All models)	
Pin 1	- Sense Va
Pin 2	+ Sense Va

PIN CONNECTIONS	
J5 (All models)	
Pin 1	Va Return
Pin 2	Power Good

PIN CONNECTIONS	
J6 (All models)	
Pin 1	- Sense Vb
Pin 2	+ Sense Vb

150 Watt AC/DC universal input switch mode power supplies

Enclosed mechanical drawing



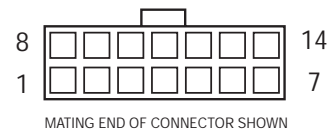
OUTPUT PIN CONNECTIONS

P1	SINGLE	DUAL	TRIPLE	QUAD
Pin 1	Return	Return	Return	Return
Pin 2	Return	Return	Return	Return
Pin 3	Return	Return	Return	Return
Pin 4	Va	Va	Vb	Vb
Pin 5	Va	Va	Vb	Vb
Pin 6	Va	Va	Vb	Vb
Pin 7	No Connect.	No Connect.	No Connect.	Vd
Pin 8	No Connect.	No Connect.	Vc	Vc
Pin 9	Return	Return	Return	Return
Pin 10	Return	Return	Return	Return
Pin 11	Return	Return	Return	Return
Pin 12	Va	Vb	Vb	Vb
Pin 13	Va	Vb	Vb	Vb
Pin 14	Va	Vb	Vb	Vb

Output pin assignment (P1)

Molex connector (P/N: 39-01-2145) or equivalent with Molex 39-29-9149 crimp terminals. The pin assignment is summarized below. Pin numbering is from right to left facing the connector.

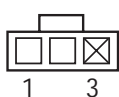
P1 OUTPUT POWER CONNECTOR



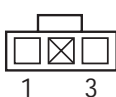
Signal pin assignment (P4, P5, P6)

Three two-pin Molex xxxx type connectors (P/N: 39-01-2145) with x.xxx" spacing or equivalent with Molex (P/N: 39-30-2032) or equivalent crimp terminals. The pin assignment is summarized in the following tables. Pin numbering is from right to left facing the connector.

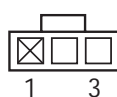
P4 Va Sense



P5 Power Good



P6 Vb Sense



PIN CONNECTIONS	
P4 (All models)	
Pin 1	- Sense Va
Pin 2	+ Sense Va
Pin 3	No Connection

PIN CONNECTIONS	
P5 (All models)	
Pin 1	Va Return
Pin 2	No Connection
Pin 3	Power Good

PIN CONNECTIONS	
P6 (All models)	
Pin 1	No Connection
Pin 2	- Sense Vb
Pin 3	+ Sense Vb

Va is the first output
Vb is the second output
Vc is the third output
Vd is the fourth output.