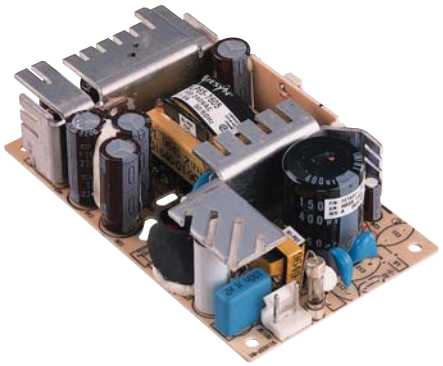
NLP65 Series
Single, dual, and triple output

Total Power: 65 - 75W
Input Voltage: 85 - 264 Vac
120 - 370 Vdc*
# of Outputs: Single, dual, triple



RoHS 2002/95/EC

Special Features

- Universal Input
- 3" x 5" footprint
- Low profile fits 1U applications
- EN61000-3-2 compliance option (HCC)
- Overvoltage and short circuit protection
- 65 W with free air convection cooling
- EN55022, EN55011 conducted emissions level B
- EN61000-4-2,-3,-4, -5, -6 immunity compliant
- RoHS compliant
- LPX80 enclosure kit available
- 2 year warranty

Safety

VDE0805/EN60950/IEC950
File No. 1040100-3336-0096
Licence No. 114404

UL1950 File No. E136005

CSA C22.2 No. 950
File No. LR41062C

China Compulsory
Certification 60950

*NLP65-76xx version only

Electrical Specifications

Input		
Input voltage range	Universal input, (See Note 2)	85-264 Vac
	NLP65-76xx version only	120-370 Vdc
Input frequency range		47-63 Hz
Input 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 120 Vac, without PFC 230 Vac, without PFC	1.05 A rms 0.51 A rms 1.40 A rms 0.80 A rms
Input fuse	UL/IEC127	S3.15 A, 250 Vac In live and neutral

Output		
Total regulation (line and load)	Main output Auxiliary outputs	±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., 1ms max. recovery to 1%
Temperature coefficient		±0.02%/°C
Overvoltage protection	Main outputs	125%, ±10%
Short circuit protection	Cyclic operation	Continuous
Minimum output current	Single and multiple	(See Note 6)

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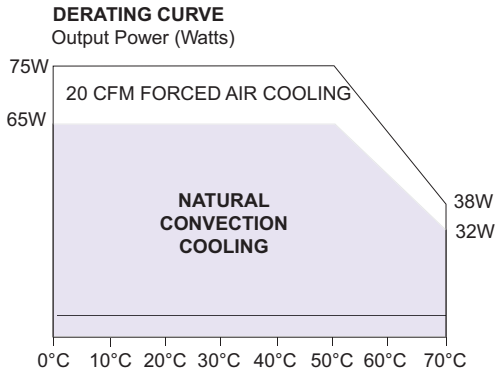
All specifications are typical at nominal input, full load at 25° C unless otherwise stated.

EMC Charateristics (11, 12)		
Conducted emissions	EN55022, FCC part 15	Level B
Radiated emissions	EN55022, FCC part 15	Level A
ESD air	EN61000-4-2, level 3	Perf. criteria 1
ESD contact	EN61000-4-2, level 4	Perf. criteria 1
Surge	EN61000-4-2, level 3	Perf. criteria 1
Fast transients	EN61000-4-4, level 3	Perf. criteria 1
Radiated immunity	EN61000-4-3, level 3	Perf. criteria 2
Conducted immunity	EN61000-4-6, level 3	Perf. criteria 2

General Specifications		
Hold-up time	120 Vac, 60 Hz 230 Vac, 50 Hz	16 ms @ 65 W 78 ms @ 65 W
Efficiency	120 Vac, 65 W	72% typical
Isolation voltage	Input/output Input/chassis	3000 Vac 1500 Vac
Switching frequency	Fixed	100 kHz, ±5 kHz
Approvals and standards (see Notes 9, 13)	EN60950, VDE0805 IEC950, UL1950, CCC60950 CSA C22.2 No. 950	
Weight	283 g (10 oz)	
MTBF demonstrated	MIL-HDBK-217F	150,000 hours min

Environmental Specifications

Thermal performance (see Notes 1, 3, 10)	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	65 W
	0 °C to 50 °C ambient, 20 CFM forced air (See Note 10)	75 W
	Peak (0 °C to +50 °C, 60 s)	See table
Relative humidity	Non-condensing	5% to 95% RH
Altitude	Operating	10,000 feet max
	Non-operating	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



Output Voltage	Output Current Max (1)	Peak (3)	Fan (10)	Ripple (4)	Total Regulation (6)	Non-harmonic Corrected	Harmonic Corrected	Ground Pin (12, 14, 17)
+5 V (IA)	7.5 A	9.1 A	8 A	50 mV	±2.0%	NLP65-7608J	NLP65-9608J	NLP65-X608GJ
+12 V (IB)	2.5 A	3.3 A	3 A	150 mV	±5.0%			
–12 V	0.65 A	0.81 A	0.8 A	120 mV	±5.0%			
+5 V (IA)	7.5 A	9.1 A	8 A	50 mV	±2.0%	NLP65-7610J	NLP65-9610J	NLP65-X610GJ
+15 V (IB)	2.2 A	2.9 A	2.5 A	150 mV	±5.0%			
–15 V	0.65 A	0.85 A	0.8 A	150 mV	±5.0%			
+5 V	7.0 A	9.1 A	8.0 A	50 mV	±2.0%	NLP65-3322J		
+24 V	1.5 A	2.6 A	2.0 A	240 mV	±5.0%			
+12 V	0.7 A	1.0 A	1.0 A	120 mV	±5.0%			
+5 V (IA)	7 A	9.1 A	8 A	50 mV	±2.0%	NLP65-7620J	NLP65-9620J	NLP65-X620GJ
+24 V (IB)	2 A	2.6 A	2 A	240 mV	±5.0%			
+5 V (IA)	7 A	9.1 A	8 A	50 mV	±2.0%	NLP65-7629J	NLP65-9629J	NLP65-X629GJ
+12 V (IB)	2.5 A	3.3 A	3 A	150 mV	±5.0%			
+5 V	10 A	13 A	12 A	50 mV	±2.0%	NLP65-7605J	NLP65-9605J	NLP65-X605GJ
+12 V	5.4 A	7 A	6.5 A	120 mV	±2.0%	NLP65-7612J	NLP65-9612J	NLP65-X612GJ
+15 V	4.4 A	5.7 A	5.3 A	150 mV	±2.0%	NLP65-7615J	NLP65-9615J	NLP65-X615GJ
+24 V	2.7 A	3.5 A	3.5 A	240 mV	±2.0%	NLP65-7624J	NLP65-9624J	NLP65-X624GJ

Notes

1 Natural convection cooling. Models NLP65-X629J, NLP65-X608J, NLP65-X610J must not exceed 62.5 Watts continuous output power with natural convection. Model NLP65-X620J not to exceed 65 Watts continuous output power with natural convection. Model NLP65-3322J must not exceed 60 Watts continuous output power with natural convection.

2 When the input voltage is less than 90 Vac the operating temperature range is 0 °C to +40 °C. The ripple and regulation specifications may not be met.

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 20 MHz bandwidth using a 6 inch twisted pair, terminated with a 10 µF electrolytic capacitor and a 0.1 µF ceramic capacitor.

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

6 A minimum load on the main output is required for proper start up. For multiple outputs and single +5V output, the minimum load on the +5 V is 0.2 A. For single outputs greater than +5 V the minimum load is 0.1 A. To maintain stated regulation then:
for single output units
$I \geq 0.2$ A
for multiple output units
$0.25 \leq I(A)/I(B) \leq 5$, for $I(A) \geq 0.2$ 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 Maximum continuous output power for all multiple output models must not exceed 75 Watts (70 watts for NLP65-3322J)with 20 CFM forced air cooling.

11 Conducted and radiated emissions testing were performed using the standard EN55022 set-up with a stand alone NLP65 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 chasssis. Please contact the applications group at Artesyn for assistance with EMI compliance.

12 The NLP65 units with the suffix 'G' is the ground pin and ground choke option. J2, L6 and JP10 are included. J2 is a safety agency approved grounding pin, L6 is a ground choke and JP10 is a jumper. This option is intended for use in non-metallic chassis applications where grounding is not possible via the mounting screws. The ground choke is provided to assist system EMC compliance. When performing conducted emissions testing on stand alone units, the 'G' option is required to meet level B. To order simply add the suffix 'G' to the standard model number, e.g. NLP65-7608GJ, NLP65-9608GJ. This option is available for both the PFC and non-PFC versions.

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

14 The NLP65-9608J is available with an enclosure. To order an enclosed version, see model numbering options below.

15 No PFC version, EN61000-3-2 is not applicable to this model.

16 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.

17 NOTICE: Some models do not support all options. Please contact your local Emerson Network Power representative or use the on-line model number search tool at http://www.powerversion.com.

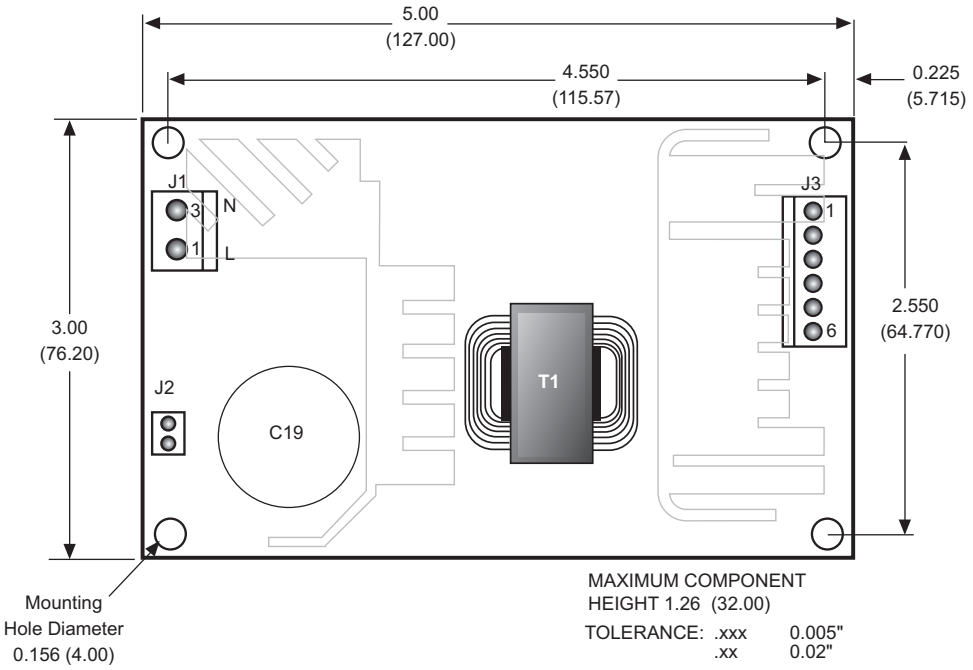
Model Numbering Options

1 The enclosure version includes: IEC connector, on/off switch, wire harness output connector and fitted cover. To order, please add the suffix 'E' the model number, e.g. NLP65-9608EJ. See NLP65 enclosure for details.

2 A Safety earth ground pin and ground choke are available as an option. To order, please add the suffix 'G' the model number, e.g. NLP65-X608GJ.

3 To order an enclosure kit (unfitted), order the part number LPX80.

Mechanical Drawing



ALL DIMENSIONS IN INCHES (mm)

INPUT	
PIN CONNECTIONS	
J1	
Pin 1	AC Line
Pin 2	No Pin
Pin 3	AC Neutral
J2 (ON 'G' SUFFIX ONLY)	
Pin 1	Safety Ground

Input and output connectors

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

DC (J3) connector type
Molex 26-60-4060 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 09-50-3061 with Molex 2478 phosphor bronze crimp terminals or equivalent.

Note: The input and output connectors are the same as those used on NFS40, NFN40, NAL40, NAN40 and NLP40.

OUTPUT PIN CONNECTIONS				
J3	**SINGLE**	**DUAL**	**TRIPLE**	
Pin 1	V (A)	V (B)	V (B)	
Pin 2	V (A)	V (A)	V (A)	
Pin 3	V (A)	V (A)	V (A)	
Pin 4	Return	Return	Return	
Pin 5	Return	Return	Return	
Pin 6	Return	N/C	V (C)	

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