POWER

NLP65 Series

Single, dual and triple output

Data Sheet

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

RoHS 6/6 COMPLIANT

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/EN60950-1
  File No. 1040100-3336-0096
- License No. 114404
- UL 60950-1
- cUL 60950-1
- CCC 60950-1
- CE LVD Directive

*NLP65-76xx version only

Electrical Specifications

Input		
Input voltage range:	Universal input (see Note 2) NLP65-76xx version only	85-264 Vac 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	1.4 A 0.51 A rms 1.40 A rms 0.80 A rms
Input fuse:	UL/IEC127	5 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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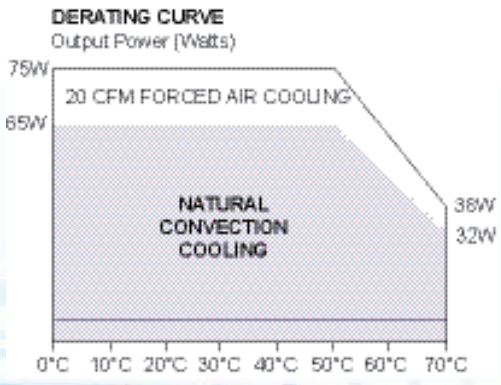
All specifications are typical at nominal input, full load at 25 °C unless otherwise stated.

EMC Charateristics [11, 12]		
Conducted emissions:	EN55022, FCC part 15	Level B
ESD air:	EN61000-4-2, level 3	Perf. criteria 1
ESD contact:	EN61000-4-2, level 4	Perf. criteria 1
Surge:	EN61000-4-5, 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)	EN60950-1, IEC60950-1	
Weight:	283 g (10 oz)	
MTBF demonstrated:	MIL-HDBK-217F	150,000 hours min

Environmental Specifications		
Thermal performance:	Operating (See derating curve)	0° C to +70 °C
(See notes 1, 3, 10)	Non-operating	-40 °C to +85 °C
	50 °C - 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 20CFM 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			Ripple[4]	Total Regulation[6]	Non-Harmonic Corrected	Harmonic Corrected	Ground Pin [12, 14, 17]
	Max[1]	Peak[3]	Fan[10]					
+5 V (IA)	7.5 A	9.1 A	8 A	50 mV	±2.0%	NLP65-7608J	NLP65-9608J[a]	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[15]		
+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
+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 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 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, use NLP65-9608EJ.
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.
17. NOTICE: Some models do not support all options. Please contact your local Artesyn Embedded Technologies representative or use the on-line model number search tool at http://www.artesyn.com/power

Model Numbering Options

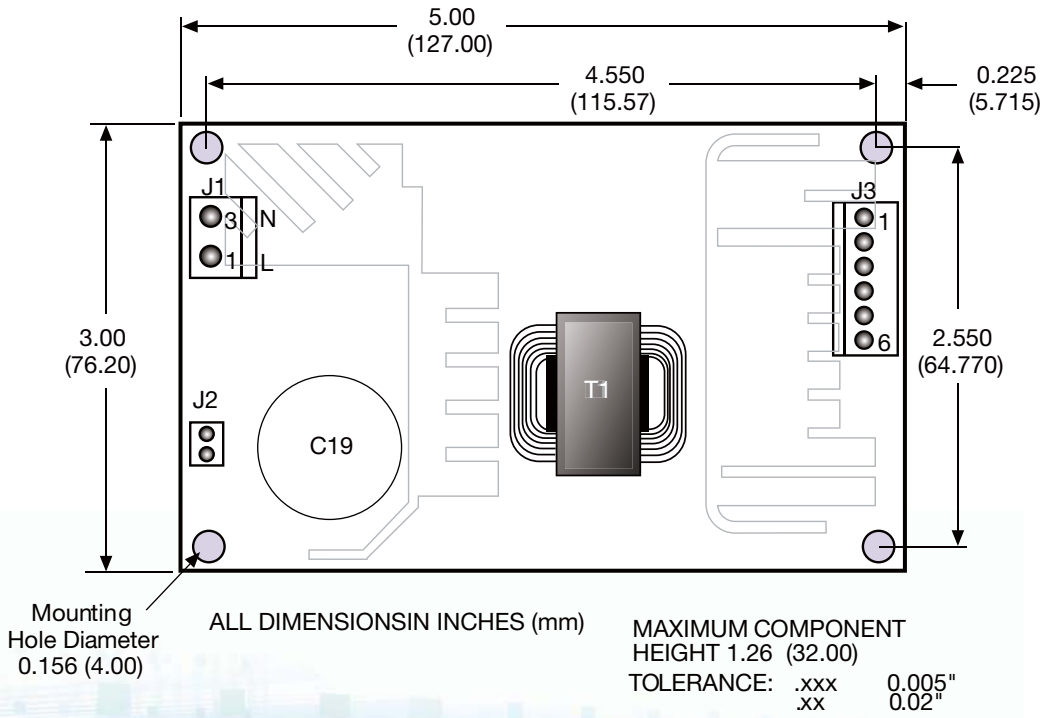
a) The enclosure version NLP65-9608EJ includes: IEC connector, on/off switch, wire harness output connector and fitted cover. To order, please add the suffix 'E' the model number. See NLP65 enclosure for details.

b) 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.

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

Mechanical Drawing



Input Pin Connections

J1	
Pin 1	AC Line
Pin 2	No Pin
Pin 3	AC Neutral
J2 (On 'G' Suffic Only)	
Pin 1	Safety Ground

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)

Input and Output Connectors		Mating Connectors
AC (J1)	Molex 26-60-4030 type or equivalent	Molex 09-50-3031 or equivalent with Molex 08-52-0113 or equivalent crimp terminals
DC (J3)	Molex 26-60-4060 or equivalent	Molex 09-50-3061 with Molex 2478 phosphor bronze crimp terminals or equivalent.

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