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NLP65 Medical Series

Single, dual and triple output

ARTESYN TECHNOLOGIES

- **85VAC to 264VAC universal input range**
- **Harmonic current correction as standard**
- **Maximum component height 1.26 inches**
- **UL, CSA and VDE safety approvals**
- **Overvoltage and short circuit protection**
- **5 x 3 x 1.26 inch (127.0 x 76.2 x 32mm) footprint**

The NLP65 Medical series is a 65W universal input AC/DC power supply with input harmonic current correction as standard. This compact design, packed in a 5 x 3 inch card with a maximum component height of 1.26 inches, is ideal for use in a variety of medical, laboratory and dental applications such as centrifuges, incubators and infusion pumps. The NLP65 Medical series comprises of eight models in single, dual and triple output configurations. Providing 65 Watts of continuous output power with free air convection, the NLP65 Medical series will deliver 75 Watts output power with 20CFM of air. The series, with full medical safety approval to EN60601 and UL2601, is CE marked, greatly accelerating design-in time and reducing system compliance costs.

CE (LVD)

2 YEAR WARRANTY

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

SPECIFICATIONS

OUTPUT SPECIFICATIONS

Output power	Natural convection	65W max.
Total regulation		See table
Rise time	At turn-on	1.0s, max.
Transient response	Main output 25% step at 0.1A/µs	5.0% max. dev., 1ms recovery to 1.0%
Temperature coefficient		±0.02%/°C
Overvoltage protection	Main outputs	125%, ±10%
Short circuit protection	Cyclic operation	Yes

INPUT SPECIFICATIONS

Input voltage range (See Note 2)	Universal input	85 to 264VAC
Input frequency range		47Hz to 63Hz
Input surge current (cold start)	120VAC 230VAC	17A max. 32A max.
Safety ground leakage current	264VAC, 60Hz	95µA
Input current	120VAC 230VAC	1.05A rms 0.51A rms
Input fuse		250VAC F 3.15A

EMC CHARACTERISTICS

Conducted emissions	EN55022, FCC part 15	Level A
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	EN61000-4-5, 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	120VAC, 60Hz	16ms @65W
Efficiency	120VAC, 65W	72% typ.
Isolation voltage	Input/output Input/chassis	4000VAC 1500VAC
Switching frequency	Fixed	100kHz, ±5kHz
Approvals and standards		EN60601, UL2601 CSA 22.2 No. 125
Weight		283g (10 oz)
MTBF	MIL-HDBK-217F	150,000 hours

ENVIRONMENTAL SPECIFICATIONS

Thermal performance	Operating ambient, (See derating curve)	0°C to +70°C
	Non-operating	-40°C to +85°C
	0°C to 50°C ambient, convection cooled	65W
	50°C to 70°C ambient, convection cooled	Derate to 50% load
Relative humidity	Non-condensing	5% to 95% RH
Altitude	Operating Non-operating	10,000 feet max. 30,000 feet max.
Vibration (See Note 5)	5Hz to 500Hz	2.43G rms approx.
Shock	per MIL-STD-810E	516.4 Part IV

NLP65 Medical Series

Single, dual and triple output

For the most current data and application support visit www.artesyn.com/powergroup/products.htm

OUTPUT VOLTAGE	OUTPUT CURRENT			RIPPLE (4)	TOTAL REGULATION (6)	MODEL NUMBER
	MAX (1)	PEAK	FAN (10)			
+5V	7.0A	9.1A	8.0A	50mV	±2.0%	NLP65-9908
+12V	2.5A	3.3A	3.0A	150mV	±5.0%	
–12V	0.5A	0.81A	1.0A	120mV	±5.0%	
+5V	7.0A	9.1A	8.0A	50mV	±2.0%	NLP65-9910
+15V	2.2A	2.9A	2.5A	150mV	±5.0%	
–15V	0.65A	0.85A	0.8A	150mV	±5.0%	
+5V	7.0A	9.1A	8.0A	50mV	±2.0%	NLP65-9920
+24V	2.0A	2.6A	2.0A	240mV	±5.0%	
+5V	7.0A	9.1A	8.0A	50mV	±2.0%	NLP65-9929
+12V	2.5A	3.3A	3.0A	150mV	±5.0%	
+5V	10.0A	13.0A	12.0A	50mV	±2.0%	NLP65-9905
+12V	5.4A	7.0A	6.5A	120mV	±2.0%	NLP65-9912
+15V	4.4A	5.7A	5.3A	150mV	±2.0%	NLP65-9915
+24V	2.7A	3.5A	3.5A	240mV	±2.0%	NLP65-9924

Notes

1 Natural convection cooling. Models NLP65-9929, NLP65-9908, NLP65-9910 must not exceed 62.5 Watts continuous output power with natural convection. Model NLP65-9920 not to exceed 65 Watts continuous output power with natural convection.

2 When the input voltage is less than 90VAC 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 20MHz bandwidth using a 6 inch twisted pair, terminated with a 10µF electrolytic capacitor and a 0.1µF ceramic capacitor.

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

6 To maintain stated regulation then:
for single output units
$I \geq 0.2A$ I max.
for multiple output units
$0.25 \leq I(A)/I(B) \leq 5$, for $I(A) \geq 0.2A$ I(A) max.

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 with 20CFM forced air cooling at 50°C.

International Safety Standard Approvals

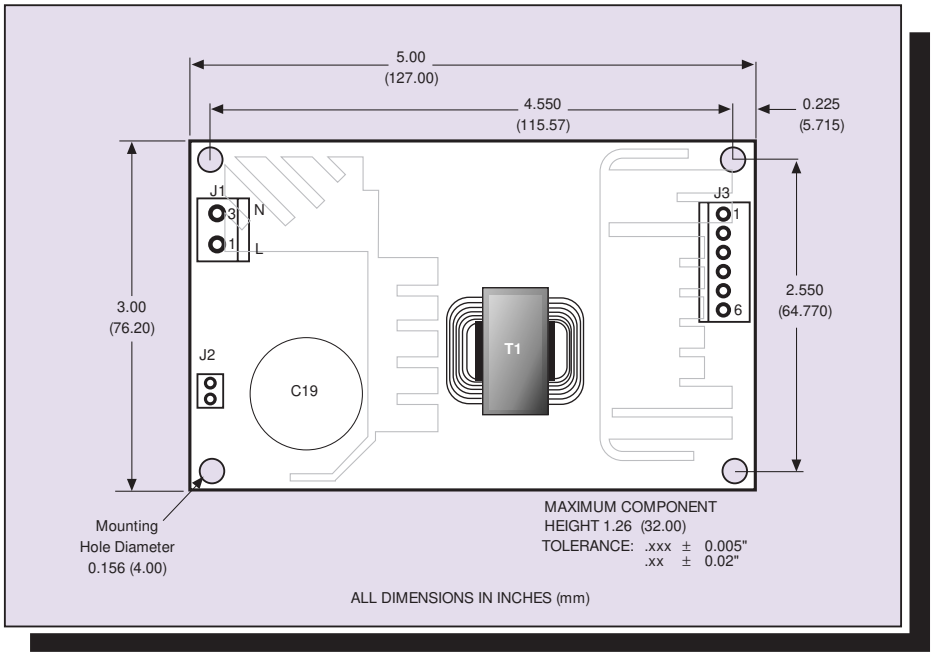
VDE0705/EN60601-1/IEC1010 File No. 10401-3336-0156/31HM3
Licence No. 121949

UL1950 File No. E147937

CSA C22.2 No. 950 File No. LR41062C

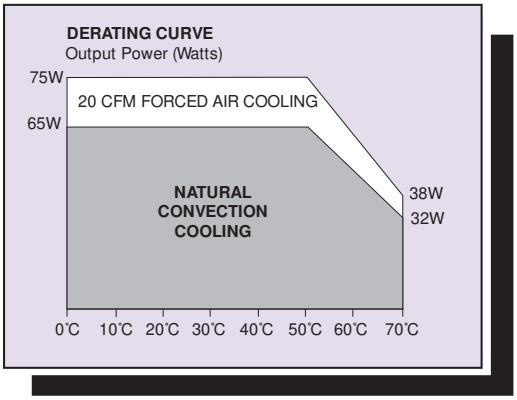
Mechanical Notes

A All dimensions are in inches (mm).



INPUT PIN CONNECTIONS	
J1	
Pin 1	AC Line
Pin 2	No Pin
Pin 3	AC Neutral
J2	
Pin 1	Safety Ground

OUTPUT PIN CONNECTIONS			
J3	**SINGLE**	**DUAL**	**TRIPLE**
Pin 1	No Connection	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	No Connection	No Pin	V (C)



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.