

NLP250 Medical Series

Single Output

Data Sheet

Total Power: 250 W
Input Voltage: 85 - 264 Vac
of Outputs: Single

SPECIAL FEATURES

- Medical safeties
- Active PFC and EN61000-3-2 compliant
- 250 W on main channel with forced air
- Low profile fits 1U applications
- U-Channel for maximum thermal performance
- Optional cover (CJ suffix)
- 5 V standby output
- 12 V fan output
- Integrated control and monitoring features
- Overcurrent, overvoltage and overtemperature protection
- Compliance to EN55022-B conducted noise standard
- Dual AC fuses
- RoHS compliant
- 2 year warranty

SAFETY

- VDE0750/EN60950
IEC950/IEC60601-1
File No. 1177400-3336-0759
- UL60601-1
File No. E186249
- Certificate No. 40014041
- CB Ref DE1-36628



Electrical Specifications

Input		
Input voltage range:	Universal input	85 - 264 Vac
Input frequency range:		47 - 63 Hz
Input surge current:	264 Vac (cold start)	40 A max.
Safety ground leakage current:	264 Vac, 50 Hz	150 μ A
Input current:	120 Vac @ 250 W 230 Vac @ 250 W	2.78 A rms 1.36 A rms
Input fuse:	UL/IEC127	T6.4 AH, 250 Vac In live and neutral
Output		
Maximum power:	200 LFM forced air 250 LFM with cover	250 watts
Adjustment range:	Main output	\pm 5%
Total regulation: (line and load)	Main output Auxiliary outputs	\pm 2.0% \pm 5.0%
Turn-on delay:	@ 120 Vac Input	2.0 s max.
Transient response:	Main output 50 - 100% Step at 0.5 A/ μ s	5.0% or 250 mV max. dev., 1 ms max recovery to 1%
Temperature coefficient:		\pm 0.02%/°C
Overvoltage protection:	Main output	115%, \pm 5%
Short circuit protection:	Cyclic operation	Continuous
Minimum output current:	Singles	0 A
Auxiliary outputs: (See Note 8, page 3)	5 Vsb 12 V (fan)	5 V @ 1.0 A 12 V @ 0.3A

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

EMC Characteristics ⁽⁵⁾		
Conducted emissions:	EN55022, FCC part 15	Level B
Harmonic current correction:	EN61000-3-2	Compliant
Voltage flicker:	EN61000-3-3	Compliant
ESD air:	EN61000-4-2	Level 3
ESD contact:	EN61000-4-2	Level 3
Radiated immunity:	EN61000-4-3	Level 3
Fast transients:	EN61000-4-4	Level 3
Surge:	EN61000-4-5	Level 3
Conducted immunity:	EN61000-4-6	Level 3
Voltage dips:	EN61000-4-11	Compliant
General Specifications		
Hold-up time:	85 Vac @ 50 Hz	20 ms @ 250 W
Efficiency:	115 Vac @ 250 W 230 Vac @ 250 W	84% typ. 86% typ.
Isolation voltage:	Input/output Input/chassis	4000 Vac 2000 Vac
Safety approvals (see note 6, page 3):	UL/cUL UL60601-1, VDE EN60601-1, CAN/CSA22.2 No. 601-1	
Weight:		650g (22 oz)
MTBF (@25 °C):	Telcordia SR-332 MIL-HDBK-217F	317,000 hours min. 158,000 hours min.

Environmental Specifications		
Thermal performance:	Operating ambient,	0 °C to +70 °C
	(See derating curve)	
	Non-operating	-40 °C to +85 °C
	0 °C to 50 °C ambient,	250 W with forced air cooling
	200 LFM forced air 250 LFM with cover	
	0 °C to 50 °C ambient, 0 °C to 40 °C with cover	175 W Convection cooled
	50 °C to 70 °C ambient,	Derate linearly to 50% load
Relative humidity:	Non-condensing	5 - 95% RH
Altitude:	Operating	10,000 feet max.
	Non-operating	30,000 feet max.
Vibration: (See Note 7, page 3)	5-500 Hz	2.5 G rms peak
Shock:	Per MIL-STD-810E	516.4 Part IV

Ordering Information

Output Voltage	Output Current			Ripple ⁽³⁾	Total Regulation	Model Numbers ^(9,10)
	Min	Max (free air) ^(1,4)	Max (forced air) ^(2,4)			
12 V	0 A	14.6 A	21 A	120 mV	± 2.0%	NLP250N-99S12J
24 V	0 A	7.3 A	10.5 A	240 mV	± 2.0%	NLP250N-99S24J

Notes

- 1 Free air convection. Maximum continuous output power not to exceed 175W. Refer to Figure 1 for the derating curve.
- 2 200 LFM (250 LFM with cover) forced air cooling from the longer side. Maximum continuous output power not to exceed 250 W.
- 3 Figure is peak-to-peak for room temperature rating. Output noise measurements are made across a 20 MHz bandwidth using a 6 inch twisted pair, terminated with a 10 μ F tantalum capacitor and a 0.1 μ F ceramic capacitor.
- 4 CAUTION: Allow a minimum of 1 second after disconnecting line power when making thermal measurements. For optimum reliability no part of the heatsink should exceed 115 °C and no semi-conductor case temperature should exceed 120 °C.
- 5 No external filtering required during conducted emissions testing but some applications may require additional filtering to achieve system compliance. Compliance with radiated EMI specifications may require mounting in a suitable enclosure.
- 6 This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.
- 7 Three orthogonal axes, random vibration 10 minutes for each axes, 2.4 G
- 8 5 V sb (standby) output is available whenever AC is present, regardless of remote ON/OFF signal status. 12 V (fan) present when main output is present.
- 9 The 'J' suffix indicates that these parts are Pb-free (RoHS 6/6) compliant. "CJ" suffix indicates covered RoHS version.
- 10 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> to find a suitable alternative.

Mechanical Drawing

CUSTOMER MOUNTING HOLES
MAX. SCREW PENETRATION 0.08in
MAX. TIGHTENING TORQUE
3.1 in-lb(0.36N.m)

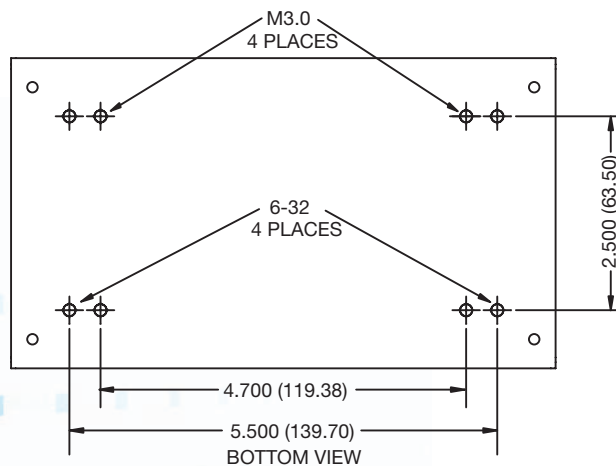
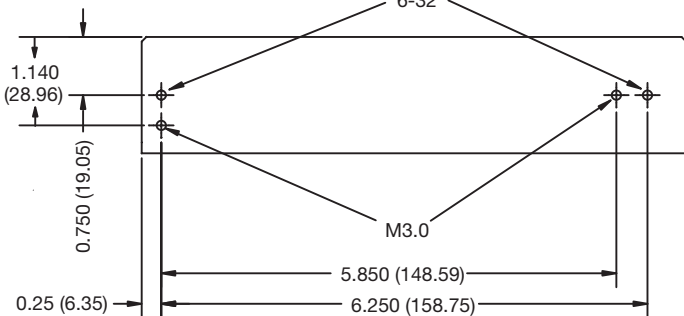
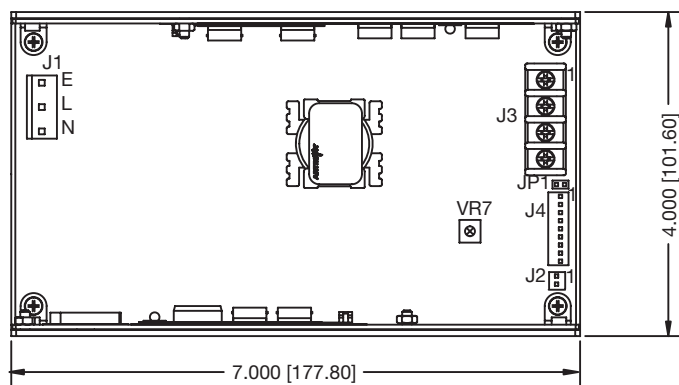
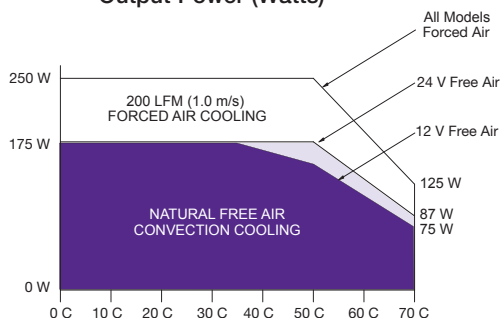
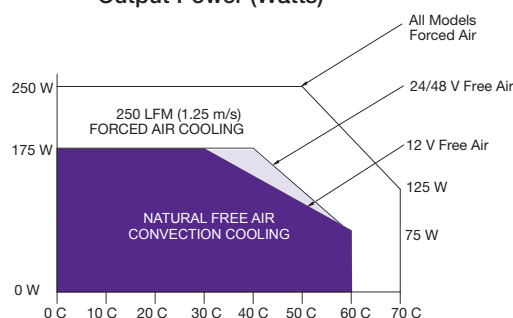


Figure 1: Derating Curve
Output Power (Watts)Figure 1b: Derating Curve With Cover
Output Power (Watts)

Connector and Mating Connector Types

Connector	Type	Mating Connector Type
J1	Molex 09-65-2058 (5273 series) void pins 2 and 4 or equivalent	Molex 09-50-8051 or equivalent with Molex 08-52-0113 or equivalent crimp terminals
J2	Molex 22-23-2021 (6373 series) or equivalent	Molex 22-01-3027 (2695 series) or equivalent with Molex 08-50-01113 (2759 series) or equivalent crimp terminals
J3	Molex terminal block 387007504 or equivalent	Terminal block contains #6-32 screw with clamp washer suitable for wire size 12-22 awg (0.5-2.5 mm ²). Max Torque tp 1.36 Nm (12 in.lb)
J4	Molex 22-23-2091 (6373 series) or equivalent	Molex 22-01-3097 (2695 series) or equivalent with Molex 08-50-0113 (2759 series) or equivalent crimp terminals

Pin Connections

J1	
Pin 1	Ground/Earth
Pin 2	Live
Pin 3	Neutral

Pin Connections Continued

J2		
Pin 1	+12 V	Fan Voltage
Pin 2	SGND	Return
J3		
Pin 1	Vo	+ Main Output
Pin 2	Vo	+ Main Output
Pin 3	RTN	Main Return
Pin 4	RTN	Main Return
J4		
Pin 1	+S	+Vo Remote Sense
Pin 2	-S	Vo Remote Sense
Pin 3	LS	Load Share Signal
Pin 4	PS OFF	Remote ON/OFF signal NO
Pin 5	PS ON	Remote ON/OFF signal NC
Pin 6	SGND	Signal Common
Pin 7	PW OK	Power Good
Pin 8	5 Vsb	Stand-by Voltage
Pin 9	DC OK	DC Power Good Signal

WORLDWIDE OFFICES

Americas

2900 S.Diablo Way
Tempe, AZ 85282
USA
+1 888 412 7832

Europe (UK)

Waterfront Business Park
Merry Hill, Dudley
West Midlands, DY5 1LX
United Kingdom
+44 (0) 1384 842 211

Asia (HK)

14/F, Lu Plaza
2 Wing Yip Street
Kwun Tong, Kowloon
Hong Kong
+852 2176 3333

ARTESYN
EMBEDDED TECHNOLOGIES

www.artesyn.com

While every precaution has been taken to ensure accuracy and completeness in this literature, Artesyn Embedded Technologies assumes no responsibility, and disclaims all liability for damages resulting from use of this information or for any errors or omissions. Artesyn Embedded Technologies, Artesyn and the Artesyn Embedded Technologies logo are trademarks and service marks of Artesyn Embedded Technologies, Inc. All other names and logos referred to are trade names, trademarks, or registered trademarks of their respective owners.
© 2014 Artesyn Embedded Technologies, Inc.

For more information: www.artesyn.com/power
For support: productsupport.ep@artesyn.com

NLP250 Medical DS Rev. 05.05.14