

## NFS40 Medical Series

### Single & Triple Output

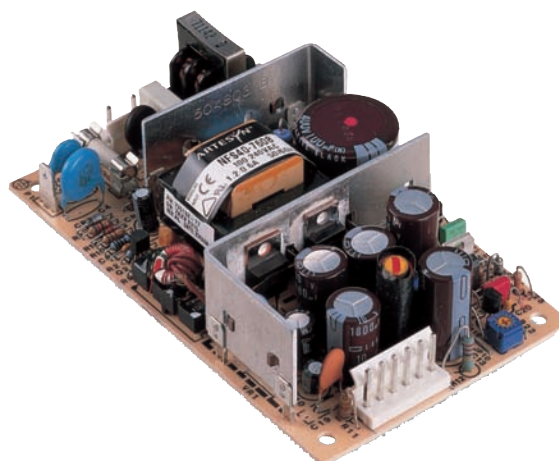
**Total Power:** 40 - 50W  
**Input Voltage:** 85 - 264 VAC  
 120 - 370 VDC  
**# of Outputs:** Single, triple

### Special Features

- 5.0 x 3.0 x 1.2 inch package (1U applications)
- Industry standard package
- Overvoltage and short circuit protection
- 40 W with free air convection
- EN55022, EN55011 conducted noise level A
- UL, VDE and CSA safety approvals
- Available RoHS compliant
- 2 year warranty

### Safety

- UL2601
- CSA22.2 No. 125
- IEC601/VDE0750



Rev.06.9.09\_118  
 NFS40 Medical  
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## Electrical Specifications

Output		
Voltage adjustability:	+5 V output on triples Vout on singles	± 5.0% ± 5.0%
Line regulation: LL to HL, FL	Main output Auxiliary outputs	± 0.2% ± 1.0%
Load regulation: FL to NL	Main output Auxiliary outputs	± 2.0% ± 5.0%
Transient response:	+5 V (1.5 - 3 A step)	± 120 mV max. dev. 500 µs recovery
Temperature coefficient:	All outputs	±0.02%/°C
Overvoltage protection:	+5 V output	6.25 ± 0.75 Vout
Output power limit:	Primary power limited	90 W input power limit
Short circuit protection:	Single outputs Multiple outputs	Continuous Short term
Input		
Input voltage range:		85 - 264 Vac 120 - 370 Vdc
Input frequency range:		47 - 440 Hz
Input surge current:	110 Vac, 60 Hz, cold start 230 Vac, 50 Hz, cold start	10 A 22 A
Safety ground leakage current:	110 Vac, 60 Hz 230 Vac, 50 Hz	18 µA max. 28 µA max.



## Electrical Specifications Continued

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

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:	110 Vac 230 Vac	18 ms 132 ms
Efficiency:	110 Vac, 230 Vac	70% typical
Isolation voltage:	Input/output Input/chassis	4000 Vac 1500 Vac
Switching frequency:		20 - 110 kHz
Approvals and standards: (See Note 12)	VDE0750, IEC601, EN60601-1, UL2601, CSA C22.2 No. 125	
Weight:		270 g (9.6 oz)
MTBF demonstrated:	MIL-HDBK-217E	170,000 hours

## Environmental Specifications

Thermal performance:	Operating, see curve	0° C to +70 °C
	Non-operating	-40 °C to +85 °C
	0 - 50 °C ambient temperature, convection cooled	40 W
	0 - 50 °C ambient temperature	50 W @ 20 CFM
	+50 °C to +70 °C ambient	Derate linearly to 50% load
	Peak (30 seconds)	60 W
Relative humidity:	Non-condensing	5 to 95% RH
Altitude:	Operating	10,000 feet max.
	Non-operating	40,000 feet max.
Vibration (See Note 11):	5 - 500 Hz	0.75 G peak

## Ordering Information

Ordering Information						
Output Voltage	Output Currents			Ripple <sup>(4)</sup> PK-PK	Total Regulation <sup>(5)</sup>	Model Numbers <sup>(13, 14)</sup>
	Conv Max <sup>(1)</sup>	20 CFM Max. <sup>(2)</sup>	Peak <sup>(3)</sup>			
+5.1 V (V <sub>A</sub> )	3 A	5 A	7 A	50 mV	± 2.0%	NFS40-7908J
+12 V (V <sub>B</sub> )	2 A	2 A	3 A	120 mV	± 5.0%	
-12 V <sup>(6)</sup>	0.35 A	0 A	---	120 mV	± 5.0%	
+5.1 V (V <sub>A</sub> )	3 A	5 A	7 A	50 mV	± 2.0%	NFS40-7910J
+15 V (V <sub>B</sub> )	2 A	2 A	2.5 A	150 mV	± 10%/-3.0%	
-15 V <sup>(6)</sup>	0.35 A	0.5 A	---	150 mV	± 5.0%	
12 V <sup>(7)</sup>	3.3 A	4 A	5 A	120 mV	± 2.0%	NFS40-7912J
15 V <sup>(7)</sup>	2.6 A	3.3 A	4 A	150 mV	± 2.0%	NFS40-7915J
24 V <sup>(7)</sup>	1.6 A	2 A	2.5 A	240 mV	± 2.0%	NFS40-7924J
+5.1 V	4 A	7 A	5 A	50 mV	± 2.0%	NFS40-7928J
+12 V	0.35 A	1 A	0.5 A	120 mV	± 5.0%	
-12 V	0.35 A	1 A	0.5 A	120 mV	± 5.0%	

### Notes

- 1 Natural convection cooling, 40 W maximum.
- 2 Forced air, 20 CFM at 1 atmosphere, 50 W maximum.
- 3 Peak output current lasting less than 30 seconds with duty cycle less than 10%. During peak loading, outputs may go outside of total regulation limits. Peak total power must not exceed 60 W.
- 4 50 MHz bandwidth, peak-to-peak, measured differentially.
- 5 Total regulation is defined as the static output regulation at 25 °C, including initial tolerance, load currents within stated limits, and output voltages adjusted to their factory settings. Also,  $0.25^2 I_A / I_B^2 \leq 5.0$  to maintain stated regulation.
- 6 A minimum load of 0.5 A is required on the +5 V output to obtain full current from the negative output.
- 7 Single output models have floating outputs which may be referenced as either positive or negative.
- 8 Derating curve is application specific for ambient temperatures > 50 °C, for optimum reliability no part of the heatsink should exceed 120 °C and no semiconductor case temperature should exceed 130 °C.
- 9 Caution: Allow a minimum of 1 second after disconnecting the power when making thermal measurements.
- 10 Although the minimum output current of the NFS40-79XXJ is 0 A, a 4 W minimum load is required to achieve design MTBF.
- 11 Three orthogonal axes, sweep at 1 octave/min, 5 minute dwell at four major resonances.
- 12 This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.
- 13 The 'J' suffix indicates that these parts are Pb-free (RoHS 6/6) compliant.
- 14 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.PowerConversion.com> to find a suitable alternative.

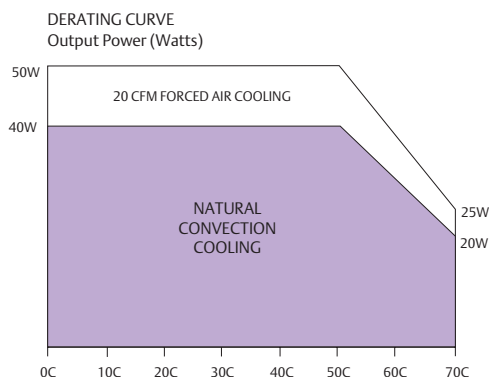
### AC mating connector

Molex 09-50-3031 or equivalent with Molex 08-50-0105 or equivalent crimp terminal.

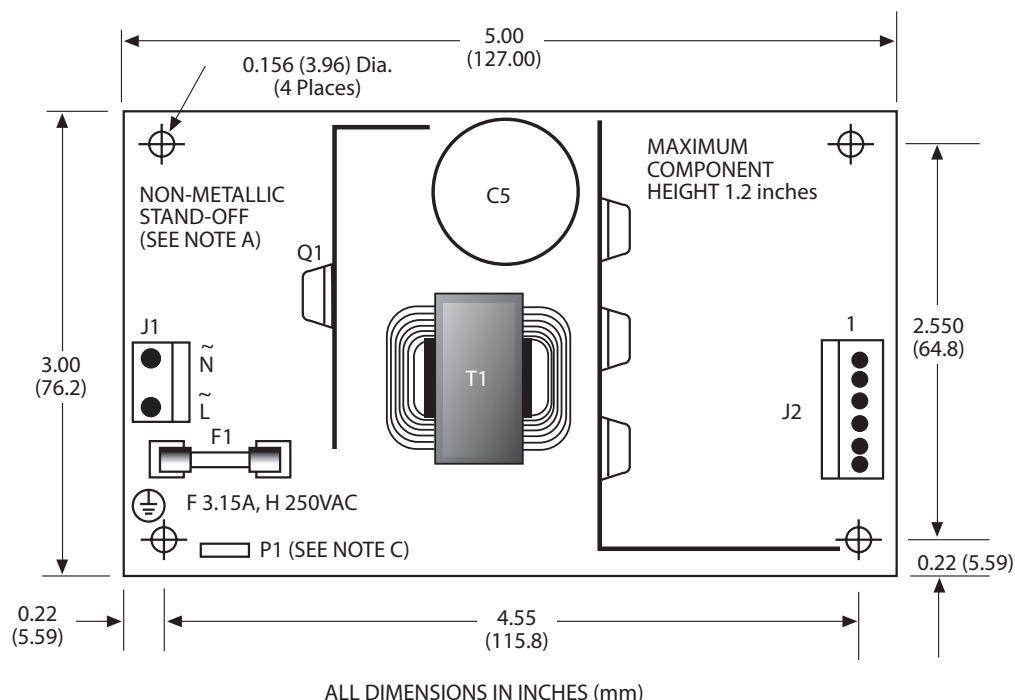
### DC mating connector

Molex 09-91-0600 or equivalent with Molex 08-50-0164 or equivalent crimp terminal.

Pin Connections			
J1	-7908J, -7928J	-7910J	SINGLES
Pin 1	AC Line	AC Line	AC Line
Pin 2	AC Neutral	AC Neutral	AC Neutral
J2			
Pin 1	+12 V	+15 V	+Vout
Pin 2	+5.1 V	+5.1 V	+Vout
Pin 3	+5.1 V	+5.1 V	+Vout
Pin 4	Return	Return	Return
Pin 5	Return	Return	Return
Pin 6	-12 V	-15 V	Return
P1			
Pin 1	Safety Earth Ground		



## Mechanical Drawing



### Mechanical Notes

- A** In order to meet safety requirements, a non-metallic stand-off is mandatory for one hole as specified in the mechanical drawing above.
- B** The ground pad of the mounting hole near P1 allows system grounding through a metal stand-off.
- C** To improve conducted noise, the ground pad of the mounting hole near the output connector should be connected with the ground pad of the mounting hole near P1. Use metal stand-offs attached to a common metal chassis. This connection also significantly attenuates common mode noise.
- D** A standard L-bracket and enclosure kit is available for mounting which contains all screws, connectors and necessary mounting hardware. Order part number NFS40CJ.

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