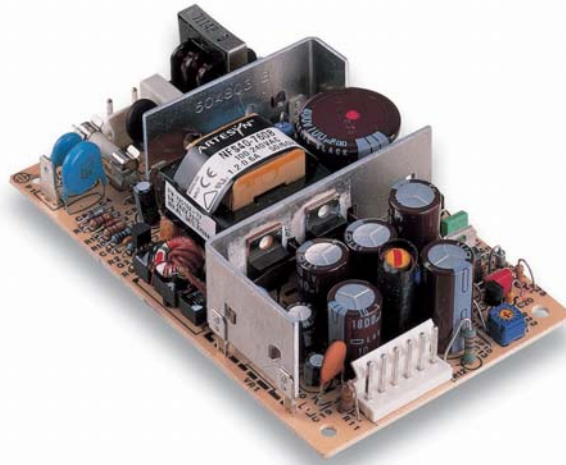


NFS40 Series

Single and triple output

Total Power: 40 - 50W
Input Voltage: 85 - 264VAC
120 - 370VDC
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

The NFS40-79XXJ models are approved to UL2601, CSA22.2 No. 125 and IEC601/VDE0750 standards. The NFS40-79XXJ series is for use in ordinary, patient-connect applications under the UL2601 and CSA C22.2 No. 125 standards, and is authorised for use in non-critical, non-patient-connect applications under the IEC601 standards.

The NFS40 medical series is a 40 W universal input ac-dc power supply on a 5 x 3 inch card with a maximum component height of 1.2 inches for use in medical applications. The NFS40 medical series has the same generic feature set as the standard NFS40 series but has been designed with lower safety ground leakage and higher isolation as required for medical safety approval. The NFS40 provides 40 W of output power with free air convection cooling which can be boosted to 50 W with 20 CFM of air. Standard features include overvoltage and short-circuit protection. The series, with full medical safety approval to EN60601 and UL2601 and the CE mark, meets conducted emissions EN55022 level A. The NFS40 medical series is designed for use in low power medical, dental and laboratory applications such as dialysis machines, monitoring equipment, instrumentation and infusion pump controls.



Specifications

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

OUTPUT SPECIFICATIONS

Voltage adjustability	+5 V output on triples Vout on singles	±5.0% ±5.0%
Line regulation	LL to HL, FL main output LL to HL, FL auxiliary output	±0.2% ±1.0%
Overshoot/undershoot	At turn-on	0%
Transient response	+5 V (1.5 A to 3 A step)	±120 mV max dev. 500 µs recovery
Temperature coefficient	All outputs	±0.02%/°C
Overvoltage protection	+ 5V output	6.25 ±0.75 Vout
Minimum output current	(See Note 10)	0 A
Output power limit	Primary power limited	90 W input power limit
Short circuit protection	Single Multiple	Continuous Short term

INPUT SPECIFICATIONS

Input voltage range		85-264 Vac 120-370 Vdc
Input frequency range		47-440 Hz
Input surge current	Cold start 110 Vac, 60 Hz Cold start 230 Vac, 50 Hz	10 A 22 A
Safety ground leakage current	110 Vac, 60 Hz 230 Vac, 50 Hz	18 µA max. 28 µA max.

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 1

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		20-10 kHz
Approvals and standards (See Note 12)		VDE0750, IEC601 EN60601-1, UL2601 CSA C22.2 No. 125
Weight		270 g (9.6 oz)
MTBF	MIL-HDBK-217E	170,000 hours

ENVIRONMENTAL SPECIFICATIONS

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

Specifications Contd.

OUTPUT VOLTAGE	OUTPUT CURRENT			RIPPLE ⁽⁴⁾ PK-PK	TOTAL REGULATION ⁽⁵⁾	MODEL NUMBERS ^(13,14)
	CONV. MAX ⁽¹⁾	20CFM MAX. ⁽²⁾	PEAK ⁽³⁾			
+5.1 V (V _A)	3 A	5 A	7 A	50 mV	±2.0%	NFS40-7908J
+12 V (V _B)	2 A	2 A	3 A	120 mV	±5.0%	
-12 V ⁽⁶⁾	0.35 A	0 A	---	120 mV	±5.0%	
+5.1 V (V _A)	3 A	5 A	7 A	50 mV	±2.0%	NFS40-7910J
+15 V (V _B)	2 A	2 A	2.5 A	150 mV	+10%/-3.0%	
-15 V ⁽⁶⁾	0.35 A	0.5 A	---	150 mV	±5.0%	
12 V ⁽⁷⁾	3.3 A	4 A	5 A	120 mV	±2.0%	NFS40-7912J
15 V ⁽⁷⁾	2.6 A	3.3 A	4 A	150 mV	±2.0%	NFS40-7915J
24 V ⁽⁷⁾	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 μ 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 μ C, for optimum reliability no part of the heatsink should exceed 120 μ C and no semiconductor case temperature should exceed 130 μ 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. TSE RoHS 5/6 (non Pb-free) compliant versions may be available on special request, please contact your local sales representative for details.
- 14 NOTICE: Some models do not support all options. Please contact your local Artesyn representative or use the on-line model number search tool at <http://www.artesyn.com/powergroup/products.htm> 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

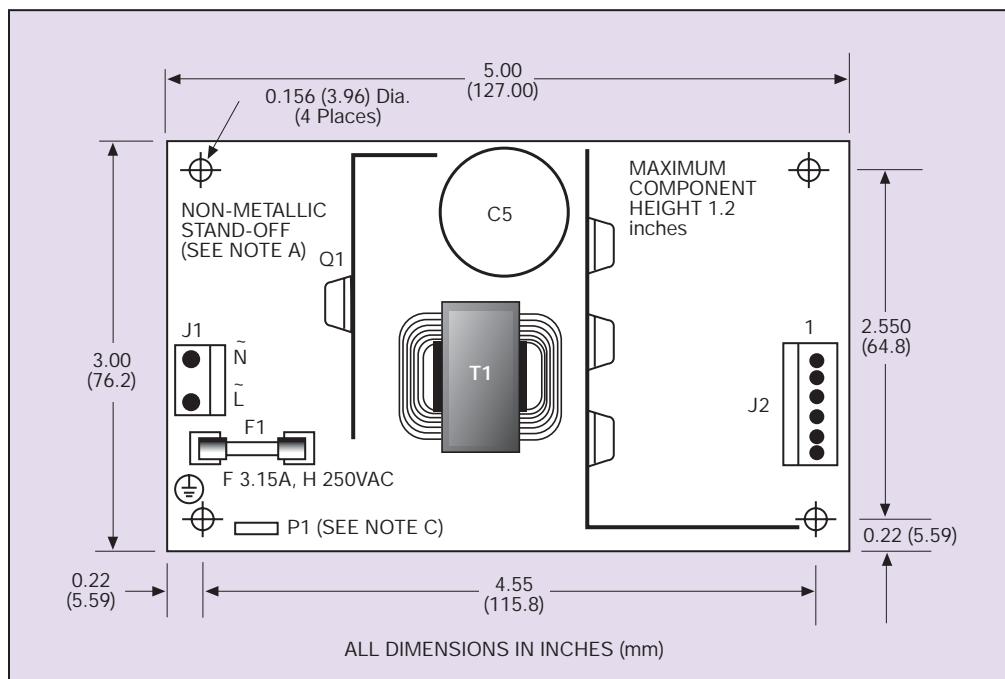
Molex 09-91-0600 or equivalent with Molex 08-50-0164 or equivalent crimp terminal.

PIN CONNECTIONS			
J1	-7908J, 7928J	-7901J	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		

NO. 3

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 cover is available for mounting which contains all screws, connectors and necessary mounting hardware. Order part number 'NFS40 COVER KIT'.



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