

## NFS40 Series

Single and triple output

### Data Sheet

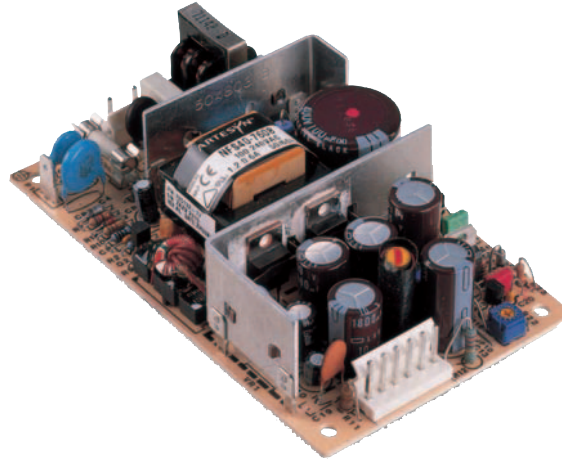
**Total Power: 40 - 50 W**  
**Input Voltage: 85-264 Vac**  
**120 - 370 Vdc**  
**# of Outputs: Single, Triple**

### 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
- 50 W with 20 CFM forced air
- EN55022, EN55011 conducted noise level B
- UL, VDE and CSA safety approvals
- Available RoHS compliant
- 2 years warranty

### SAFETY

- VDE0805/EN60950/
- IEC950/IEC1010
- File No. 10401-3336-0044
- License No. 2559
- UL60950-1 File No. E13002
- CSA C22.2 No. 950
- File No. LR41062C



### Electrical Specifications

Input		
Voltage adjustability:	+5V 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:	+5V (1.5 - 3A)	± 120 mV max. dev. 500 µs recovery
Temperature coefficient:	All outputs	± 0.02%/°C
Overvoltage protection:	+5V output	S3.15 A, 250 Vac In live and neutral
Output power limit:	Primary power limited	90 W input power limit
Short circuit protection:	Single outputs Multiple outputs	Continuous Short term
Output		
Input voltage range:	Universal input	85 - 264 Vac 120 - 370 Vdc
Input frequency range:		47-440 Hz
Max. input surge current:	132 Vac, cold start 264 Vac, cold star	12 A max. 24 A max.
Safety ground leakage current:	110 Vac, 60 Hz 230 Vac, 50 Hz	0.13 mA, max. 0.32 mA, max.

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

### EMC Characteristics <sup>(11, 12)</sup>

Conducted emissions:	EN55022, FCC part 15	Level B
Radiated emissions:	EN55022	Level A
ESD air:	EN61000-4-2, level 3	Perf. criteria 1
ESD contact:	EN61000-4-2, level 4	Perf. criteria 1
Surge:	EN61000-4-2, 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, 40W 230 Vac, 40W	14 ms 110 ms
Efficiency:		70% typical
Isolation voltage:	Input/output Input/chassis	3000 Vac 1500 Vac
Switching frequency:	Variable	
Approvals and standards: (see Notes 9, 13)	VDE0805, EN60950, IEC950, IEC1010, UL1950, CSA C22.2 No. 950	
Weight:	280g (9.88 oz)	
MTBF demonstrated:	MIL-HDBK-217E	170,000 hours

### Environmental Specifications

Thermal performance:	Operating	0°C to +70°C
(See Notes 8, 10)	Non-operating	-40°C to +85°C
	50°C ambient temp., convection cooled	40W
	Forced air cooling	50W @ 20 CFM
	+50°C to +70°C ambient	Derate linearly to 50% load
	Peak (60 seconds)	60W
Relative humidity:	Non-condensing	5 to 80% RH
Altitude:	Operating	10,000 feet max.
	Non-operating	40,000 feet max.
Vibration (See Note 11):	5-500Hz	2.4 G rms peak

## Ordering Information

Output Voltage	Output Current			Ripple <sup>(4)</sup>	Total Regulation <sup>(5)</sup>	Model Numbers <sup>(13, 14, F)</sup>
	Max <sup>(1)</sup>	Peak <sup>(2)</sup>	Fan <sup>(3)</sup>			
+5.1 V (A)	3 A	7 A	5 A	50 mV	± 2.0%	NFS40-7608J <sup>(5,6)</sup>
+12 V (B)	2 A	3 A	2 A	120 mV	± 5.0%	
-12 V (C)	0.35 A	1 A	0.5 A	120 mV	± 5.0%	
+5.1 V (A)	4 A	7 A	5 A	50 mV	± 2.0%	NFS40-7628J <sup>(12)</sup>
+12 V (B)	0.35 A	1 A	0.5 A	120 mV	+ 5.0%	
-12 V (C)	0.35 A	1 A	0.5 A	120 mV	+ 5.0%	
+5.1 V (A)	3 A	7 A	5 A	50 mV	± 2.0%	NFS40-7607J <sup>(5,6)</sup>
+12 V (B)	2 A	3 A	2 A	120 mV	± 5.0%	
-5.0 V (C)	0.35 A	1 A	0.5 A	50 mV	± 5.0%	
+5.1 V (A)	3 A	7 A	5 A	50 mV	± 2.0%	NFS40-7610J <sup>(5,6)</sup>
+15 V (B)	2 A	2.5 A	2 A	150 mV	± 10.0%/-3.0%	
-15 V (C)	0.35 A	1 A	0.5 A	150 mV	± 5.0%	
3.3 V	6 A	12 A	8 A	100 mV	± 2.0%	NFS40-76S3J
+5.1 V	6 A	12 A	8 A	100 mV	± 2.0%	NFS40-7605J
+12.0 V	3.3 A	5 A	4 A	120 mV	± 2.0%	NFS40-7612J
+15.0 V	2.6 A	4 A	3.3 A	150 mV	± 2.0%	NFS40-7615J
+24.0 V	1.6 A	2.5 A	2 A	240 mV	± 2.0%	NFS40-7624J

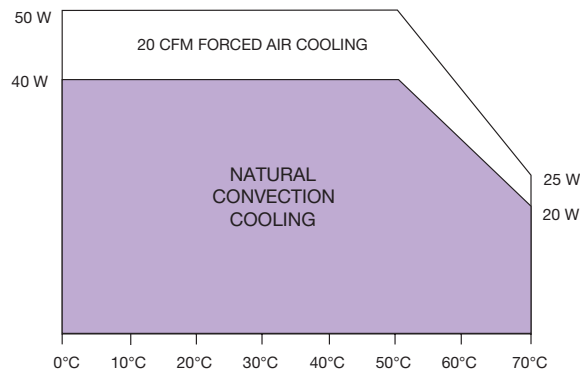
## Notes

- Natural convection cooled, 40W maximum.
- 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 60W.
- Forced air, 20 CFM at 1 atmosphere, 50W maximum.
- Figure is peak-to-peak. Output noise is measured across a 50 MHz bandwidth using a 12 inches twisted pair, terminated with a 47 µF capacitor.
- Total regulation is defined as the static output regulation at 25°C, including initial tolerance, line voltage within stated limits, load currents within stated limits, and output voltages adjusted to their factory settings. Also,  $0.25 < I(A)/I(B) < 5.0$  to maintain stated regulation. This does not apply to the NFS40-7628J power supply as it has regulated auxiliary outputs.
- A minimum load of 0.5 A is required on the +5V output to obtain full current from the negative output.
- The NFS40 offers the possibility of power sharing between outputs. Consult factory for details.
- Derating curve is application specific for ambient temperatures >50°C, for optimum reliability no part of the heatsink should exceed 110 °C and no semiconductor case temperature should exceed 115°C.
- A 4 W minimum load is recommended to achieve the design MTBF.
- Caution: Allow a minimum of 1 second after disconnecting the power when making thermal measurements.
- Three orthogonal axes, sweep at 1 octave/minute, 5 minutes dwell at four major resonances.
- The NFS40-7628J has separately linear regulated +12 V and -12 V outputs. The loading conditions in Notes 5 and 6 do not apply.
- This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.
- The 'J' suffix indicates that these parts are Pb-free (RoHS 6/6) compliant.
- 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.

### Pin Assignments

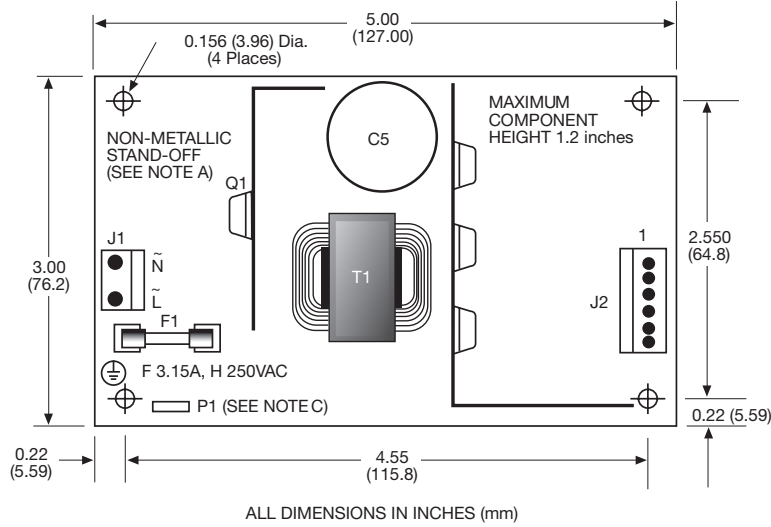
J1	-7608J, -7628J	-7607J	-7610J	SINGLES
Pin 1	AC Live	AC Live	AC Live	AC Live
Pin 2	AC Neutral	AC Neutral	AC Neutral	AC Neutral
<b>J2</b>				
Pin 1	+12 V	+12 V	+15 V	+Vout
Pin 2	+5.1 V	+5.1 V	+5.1 V	+Vout
Pin 3	+5.1 V	+5.1 V	+5.1 V	+Vout
Pin 4	Return	Return	Return	Return
Pin 5	Return	Return	Return	Return
Pin 6	-12 V	-5 V	-15 V	Return
<b>P1<sup>(e)</sup></b>				
Pin 1	Safety Ground			

DERATING CURVE  
Output Power (Watts)





Mechanical Drawings



Notes

1. In order to meet safety requirements, a non-metallic stand-off is mandatory for one hole as specified in the mechanical drawing above.
2. The ground pad of the mounting hole near P1 allows system grounding through a metal stand-off.
3. 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.
4. A standard enclosure kit is available for mounting which contains all screws, connectors and necessary mounting hardware. Order part number NFS40CJ.

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