

## NFS40 Series

### Single and triple output

**Total Power:** 40 - 50W  
**Input Voltage:** 85 - 264 Vac  
120 - 370 Vdc

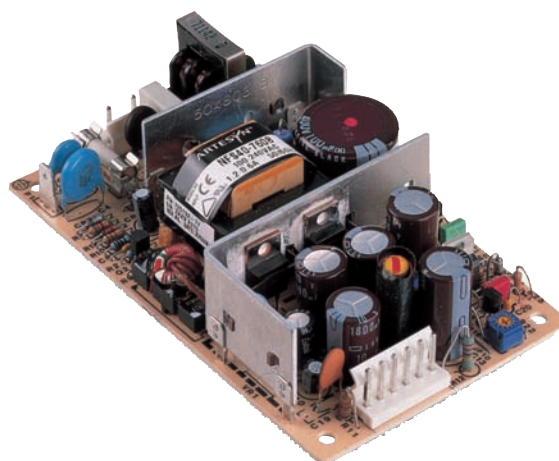
**# of Outputs:** Single, triple

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

### Safety

- VDE0805/EN60950/
- IEC950/IEC1010
- File No. 10401-3336-0044
- License No. 2559
- UL1950 File No. E136005
- CSA C22.2 No. 950
- File No. LR41062C



Rev.02.01.10\_65  
NFS40 Series  
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## Electrical Specifications

Input		
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)	± 120 mV max. dev. 500 µs recovery
Temperature coefficient:	All outputs	± 0.02%/°C
Overvoltage protection:	+5 V output	53.15 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.



## Specifications

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, 40 W 230 Vac, 40 W	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:	280 g (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	40 W
	Forced air cooling	50 W @ 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):	5-500 Hz	2.4 G rms peak

## Ordering Information

Output Voltage	Output Currents			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%	NFS40-7653J
+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

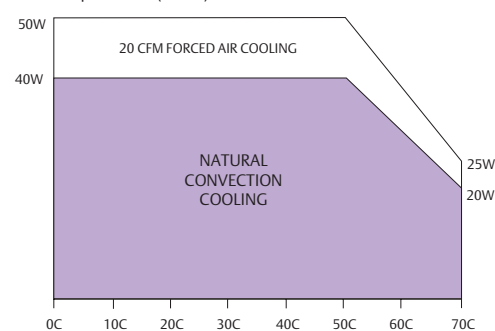
## Notes

- 1 Natural convection cooled, 40 W maximum.
- 2 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.
- 3 Forced air, 20 CFM at 1 atmosphere, 50 W maximum.
- 4 Figure is peak-to-peak. Output noise is measured across a 50 MHz bandwidth using a 12 inch twisted pair, terminated with a 47  $\mu$ F capacitor.
- 5 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.
- 6 A minimum load of 0.5 A is required on the +5 V output to obtain full current from the negative output.
- 7 The NFS40 offers the possibility of power sharing between outputs. Consult factory for details.
- 8 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.
- 9 A 4 W minimum load is recommended to achieve the design MTBF.
- 10 Caution: Allow a minimum of 1 second after disconnecting the power when making thermal measurements.
- 11 Three orthogonal axes, sweep at 1 octave/minute, 5 minute dwell at four major resonances.
- 12 The NFS40-7628J has separately linear regulated +12 V and -12 V outputs. The loading conditions in Notes 5 and 6 do not apply.
- 13 This product is only for inclusion by professional installers within other equipment and must not be operated as a stand alone product.
- 14 The 'J' suffix indicates that these parts are Pb-free (RoHS 6/6) compliant.
- 15 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.

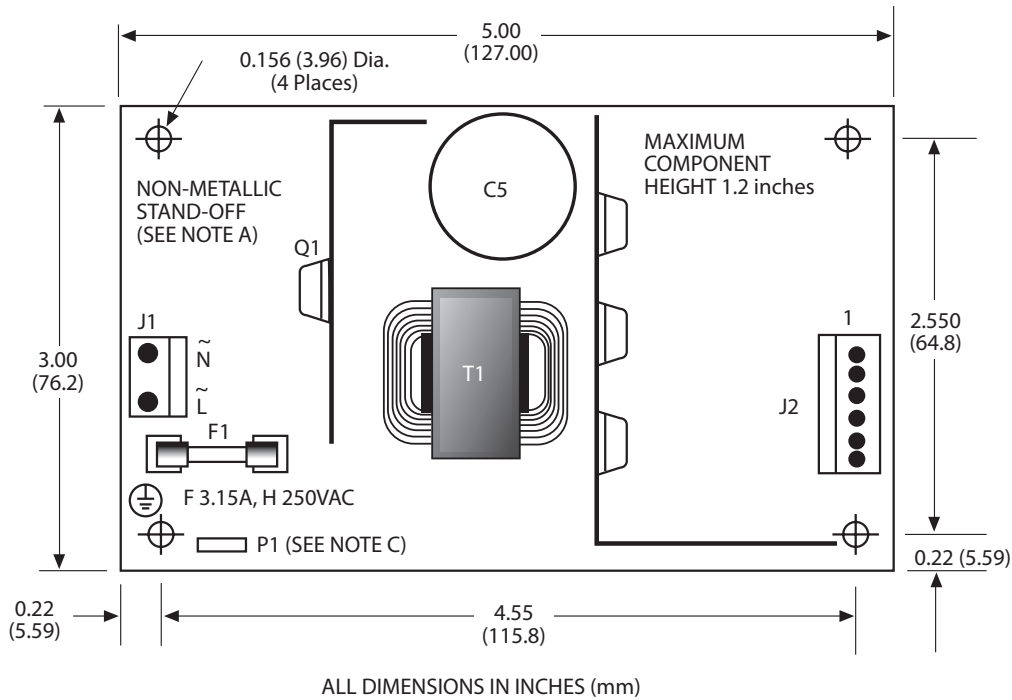
## Pin Connections

J1	-7608J, -7628J	-7607J	-7610J	SINGLES
Pin 1	AC Live	AC Live	AC Live	AC Line
Pin 2	AC Neutral	AC Neutral	AC Neutral	AC Neutral
J2				
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
P1 <sup>(c)</sup>				
Pin 1	Safety Ground			

DERATING CURVE  
Output Power (Watts)



## 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 enclosure kit is available for mounting which contains all screws, connectors and necessary mounting hardware. Order part number NFS40CJ.

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