HELIOS
POWER SOLUTIONS
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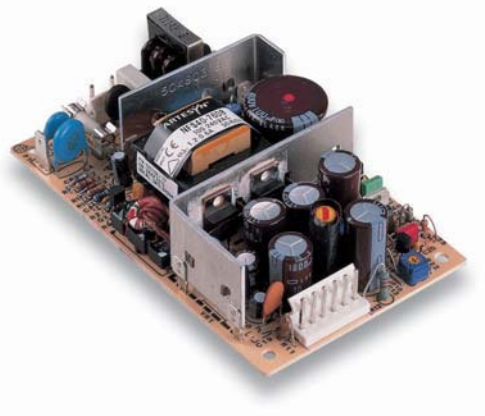
NFS40 SERIES

AC/DC Single & Multi Output: 40Watts

- **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**



The NFS40 series is a 40 W universal input ac-dc power supply on a 5" x 3" card with a maximum component height of 1.2" for use in 1U applications. The NFS40 series is available with a wide range of models in the industry standard 5" x 3" footprint and has proven itself to be highly reliable and versatile product for a wide range of communication and industrial applications. 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 OVP and short-circuit protection. The series, with full international safety approval and the CE mark, meets conducted noise EN55022 level A. The NFS40 series is designed for use in low power data networking, computer, telecom and industrial applications such as hubs, routers, POS terminals, cable modems, PABX's, industrial PC's and machine control.

CE (LVD)

2 YEAR WARRANTY

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

SPECIFICATIONS

OUTPUT 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)	±120 mV max. dev. 500 µs recovery
Temperature coefficient	All outputs	±0.02%/°C
Overvoltage protection	+5 V output	125% ±15% Vout
Output power limit	Primary power limited	90 W input power limit
Short circuit protection	Single outputs Multiple outputs	Continuous Short term

INPUT SPECIFICATIONS

Input voltage range	Universal input	85-264 Vac 120-370 Vdc
Input frequency range		47-440Hz
Max. input surge current	132 Vac, cold start 264 Vac, cold start	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.

EMC CHARACTERISTICS

Conducted emissions	EN55022, FCC part 15	Level A
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	EN61000-4-5, 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, 40 Watts 230 Vac, 40 Watts	14 ms 110 ms
Efficiency		70% typical
Isolation voltage	Input/output Input/chassis	3000 Vac 1500 Vac
Switching frequency		Variable
Approvals and standards (See Note 13)		VDE0805, EN60950 IEC950, IEC1010, UL1950 CSA C22.2 No. 950
Weight		280 g (9.88 oz)
MTBF (See Note 9)	MIL-HDBK-217E	170,000 hours

ENVIRONMENTAL SPECIFICATIONS

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

REV 23-07-07

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OUTPUT VOLTAGE	OUTPUT CURRENTS			RIPPLE [4]	TOTAL REGULATION [5]	MODEL NUMBER [14,15,D]
	MAX [1]	PEAK [2]	FAN [3]			
+5.1 V (A)	3 A	7 A	5 A	50 mV	±2.0%	NFS40-7608J [5,6]
+12.0 V (B)	2 A	3 A	2 A	120 mV	±5.0%	
–12.0 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 [12]
+12.0 V (B)	0.35 A	1 A	0.5 A	120 mV	±5.0%	
–12.0 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 [5,6]
+12.0 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 [5,6]
+15.0 V (B)	2 A	2.5 A	2 A	150 mV	+10%/–3.0%	
–15.0 V (C)	0.35 A	1 A	0.5 A	150 mV	±5.0%	
+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 µF 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 NFS40-7628 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 NFS40-7628 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. TSE RoHS 5/6 (non Pb-free) compliant versions may be available on special request, please contact your local sales representative for details.
15 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.

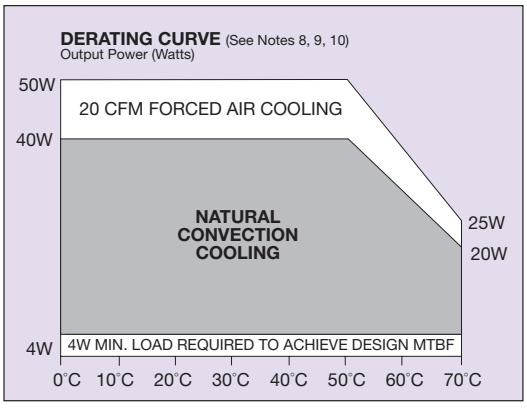
AC mating connector

Molex 09-50-3031 or equivalent with Molex 08-50-0164 or equivalent crimp terminals.

DC mating connector

Molex 09-50-3061 or equivalent with Molex 08-50-0164 or equivalent crimp terminals.

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[C]				
Pin 1	Safety Ground			



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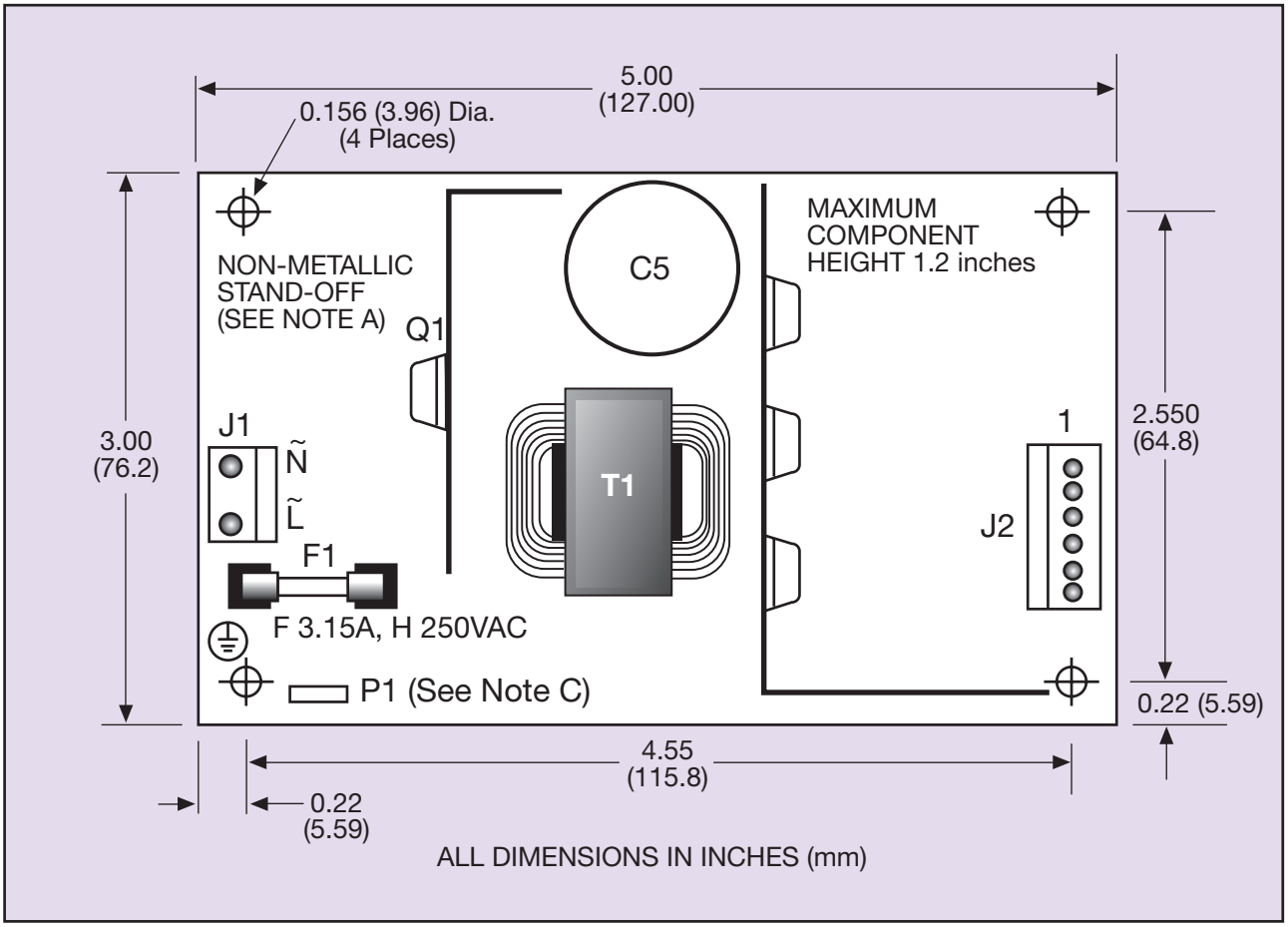
Mechanical Notes

A In order to meet safety requirements, a non-metallic stand-off is mandatory for one hole as specified in the mechanical drawing.

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.



International Safety Standard Approvals

VDE0805/EN60950/IEC950/IEC1010 File No. 10401-3336-0044
Licence No. 2559

UL1950 File No. E136005

CSA C22.2 No. 950 File No. LR41062C