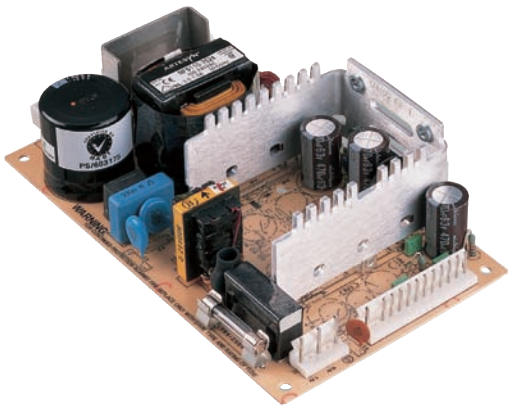
# NFS110 Series

## Single & Quad output



**Total Power:** 80 - 110 W
**Input Voltage:** 85 - 264 Vac
120 - 370 Vdc
**# of Outputs:** Single, quad

RoHS 2002/95/EC

## Special Features

- 7.0 x 4.25 x 1.8 inch package
- Overvoltage and short circuit protection
- 110 W with 20 CFM
- Adjustable outputs
- EN55022, EN55011 conducted emissions level B
- UL, VDE and CSA safety approvals
- CE mark
- Available RoHS compliant
- 2 year warranty

## Safety

- VDE0805/EN60950/
- IEC950/IEC1010
  File No. 10401-3336-0213
- Licence No. 4001467 7
- UL1950 File No. E132002
- CSA C22.2 No. 950
  File No. LR41062C

# Electrical Specifications

| Output | | |
|---|---|---|
| Voltage adjustability: | +5.1 V o/p on multi's<br>5.1 V single output<br>12 V single output<br>15 V single output<br>24 V single output | 3.0%<br>3.0%<br>12 - 14 V<br>15 - 18 V<br>24 - 30 V |
| Line regulation: | LL to HL, FL<br>All outputs on all units | ±0.1% max. |
| Overshoot/undershoot: | At turn-on | 0% |
| Temperature coefficient: | All outputs | ±0.02%/°C |
| Overvoltage protection: | Multi o/p 5.1 V only<br>5.1 V single output<br>12 V single output<br>15 V single output<br>24 V single output | 6.25 V ± 0.75 V<br>6.25 V ± 0.75 V<br>15.75 V ± 1.0 V<br>22 V ± 1.5 V<br>33 V ± 2.5 V |
| Output power limit: | Primary power limited | Pin max. 160 W<br>Pout min. 110 W |
| Minimum output current: | (See Note 13) | 0 A |
| Short circuit protection: | Burst mode operation | |
| **Input** | | |
| Input voltage range: | | 85 - 264 Vac<br>120 - 370 Vdc |
| Input frequency range: | | 47 - 440 Hz |
| Input surge current: | 230 Vac | 35 A |
| Safety ground leakage current: | 110 Vac, 50 Hz<br>230 Vac, 50 Hz | 0.2 mA, max.<br>0.4 mA, max. |

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

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| EMC Characteristics | | |
|---|---|---|
| Conducted emissions: | EN55022, FCC part 15 | Level B |
| 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: | EN61000-4-3, level 3 | Perf. criteria 1 |
| Fast transients: | EN61000-4-4, level 3 | Perf. criteria 1 |
| Radiated immunity: | EN61000-4-5, level 3 | Perf. criteria 2 |
| Conducted immunity: | EN61000-4-6, level 3 | Perf. criteria 1 |
| **General Specifications** | | |
| Hold-up time: | 110 Vac @ 80 W<br>110 Vac @ 110 W<br>230 Vac @ 80 W<br>230 Vac @ 100 W | 35 ms<br>17 ms<br>140 ms<br>100 ms |
| Efficiency: | Multiple outputs<br>+5.1 V single<br>12 V and 15 V singles<br>24 V single | 70% typical<br>70% typical<br>72% typical<br>75% typical |
| Isolation voltage: | Input/output<br>Input/chassis | 3000 Vac<br>1500 Vac |
| Approvals and standards:<br>(see note 12) | VDE0805, EN60950, IEC950, IEC1010, UL1950, CSA C22.2 No. 950 | |
| Weight: | Singles<br>Multiple outputs | 550 g (19.4 oz)<br>600 g (21.2 oz) |
| MTBF (@25 °C): | MIL-HDBK-217E | 125,000 hours min. |

# Environmental Specifications

| | | |
|---|---|---|
| Thermal performance: | Operating ambient | 0° C to +70 °C |
| (See notes 9, 10) | Non-operating | -40 °C to +85 °C |
| | 0 °C to 50 °C convection cooled | 80 W |
| | +50 °C to +70 °C, convection cooled | Derate 2 W/°C |
| | 0 °C to +50 °C, 20 CFM forced air | 110 W |
| | +50 °C to +70 °C, 20CFM forced air | Derate 2.75 W/°C |
| | Peak, 0 °C to +50 °C, max. 60 seconds | 110W |
| Relative humidity: | Non-condensing | 5 to 95% RH |
| Altitude: | Operating | 10,000 feet max. |
| | Non-operating | 40,000 feet max. |
| Vibration:<br>(See Note 11) | 5 - 500 Hz | 2.4 G rms peak |