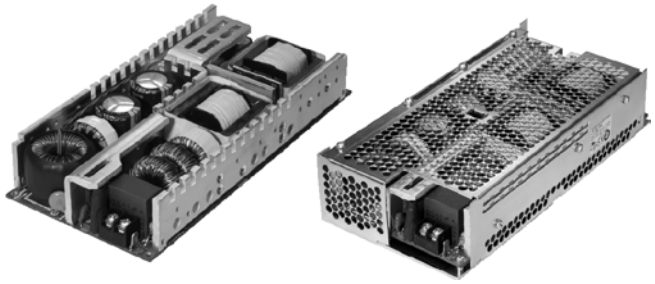
# 400 WATTS

## NXT-400 SERIES AC-DC

### FEATURES:

- **RoHS Compliant**
- **2 Year Warranty**
- **High Efficiency, 85% typical**
- **High Power Density, 8.5 W / cu in.**
- **Compact 3.9" x 8.0" x 1.5" size**
- **EN 60950-1 ITE Certification**
- **EN 60601-1 Medical Certification**
- **EMC to EN 61000-6-2 & EN 60601-1-2**
- **Advanced SMT Design**
- **Optional Chassis/Cover**
- **Optional Single Wire Load Sharing**
- **Optional Remote Inhibit/Enable**



OPEN FRAME CHASSIS/COVER

## SAFETY SPECIFICATIONS

| | | |
|---|---|---|
| General | | Protection Class: I<br>Overvoltage Category: II<br>Pollution Degree: 2 |
| c UL us | Underwriters Laboratories<br>File E137708/E140259 | UL 60950-1 2nd Edition, 2007<br>UL 60601-1 1st Edition, 2006<br>ANSI/AAMI ES 60601-1, 2005 |
| IECEE CB SCHEME | | CB Reports/Certificates (including all National and Group Deviations)<br>IEC 60950-1/a1:2009, Second Edition<br>IEC 60601-1:1988 +A1:1991 +A2:1995<br>IEC 60601-1:2005 Third Edition |
| c UL us | UL Recognition<br>Mark for Canada<br>File E137708/E140259 | CAN/CSA-C22.2 No. 60950-1-07, 2nd Edition<br>CAN/CSA-C22.2 No. 601-1-M90, 2005<br>CAN/CSA-C22.2 No. 60601-1:2008 |
| TUV | TUV | EN 60950-1/A12:2011<br>EN 60601-1/A2:1995<br>EN 60601-1:2006 |
| CE | Low Voltage Directive<br>RoHS Directive (Recast) | (2006/95/EC of December 2006)<br>(2011/65/EU of June 2011) |

## MODEL LISTING

| | OPEN FRAME | | CHASSIS/COVER | |
|---|---|---|---|---|
| **MODEL** | **300 LFM** | **CONVECTION COOLED** | **300 LFM** | **CONVECTION COOLED** |
| NXT-400-1001 | 2.5V/80.0A | 2.5V/45.0A | 2.5V/72.0A | 2.5V/40.5A |
| NXT-400-1002 | 3.3V/80.0A | 3.3V/45.0A | 3.3V/72.0A | 3.3V/40.5A |
| NXT-400-1003 | 5V/80.0A | 5V/45.0A | 5V/72.0A | 5V/40.5A |
| NXT-400-1004 | 12V/33.3A | 12V/18.8A | 12V/29.9A | 12V/16.9A |
| NXT-400-1005 | 15V/26.7A | 15V/15.0A | 15V/24.0A | 15V/13.5A |
| NXT-400-1006 | 24V/16.7A | 24V/9.4A | 24V/15.0A | 24V/8.5A |
| NXT-400-1007 | 28V/14.3A | 28V/8.0A | 28V/12.8A | 28V/7.2A |
| NXT-400-1008 | 48V/8.3A | 48V/4.7A | 48V/7.5A | 48V/4.2A |

Please refer to Output Power Derating chart.

## ORDERING INFORMATION

Please specify the following optional features when ordering:

CH - Chassis
CO - Cover
LS - Single Wire Load Sharing
LSEVB - Load Share Evaluation Board
RE - Remote Inhibit

All specifications are maximum at 25°C, 400W unless otherwise stated, may vary by model and are subject to change without notice.

## OUTPUT SPECIFICATIONS

| | | |
|---|---|---|
| Output Power at 50°C | 225W<br>400W | Convection Cooled, Open Frame<br>300 LFM Forced Air, Open Frame |
| Power Derating | 2.5 $W_{OUT}$ / 1 $V_{IN}$ below 100 $V_{IN}$ | |
| Voltage Centering | ± 0.5% | (50% load) |
| Voltage Adjust Range | 95-105% | |
| Load Regulation | 0.5% | (0-100% load change) |
| Source Regulation | 0.5% | |
| Noise | 1.0% or 100mV | Whichever is greater |
| Turn on Overshoot | None | |
| Transient Response | Output recovers to within 1% of initial set point due to a 50% step load change, 500µS maximum, 4% maximum deviation. | |
| Overvoltage Protection | Latching, between 110% and 150% of rated output voltage. | |
| Overpower Protection | 110-130% rated Pout, cycle on/off, auto recovery | |
| Hold Up Time | 16 mS min., Full Power, 85-264V Input | |
| Start Up Time | 3 Seconds, 120V Input | |

## INPUT SPECIFICATIONS

| | |
|---|---|
| Source Voltage | 85 – 264 Volts AC |
| Frequency Range | 47 – 63 Hz |
| Input Protection | Internal 10A Time Delay fuse |
| Peak Inrush Current | 50A (cold) |
| Efficiency | 85% Typical, Full Power varies by model |
| Power Factor | 0.95 (Full Power, 230V), 0.98 (Full Power, 120V) |

## ENVIRONMENTAL SPECIFICATIONS

| | |
|---|---|
| Ambient Operating Temperature Range | 0° C to + 70° C<br>Derating: See Power Rating Chart |
| Thermal Shutdown | Output voltage is inhibited during excessive internal temperatures, automatic reset. |
| Ambient Storage Temp. Range | - 40° C to + 85° C |
| Operating Relative Humidity Range | 20-90% non-condensing |
| Altitude | 10,000 ft. ASL Operating/ 40,000 ft. ASL Non-operating |
| Temperature Coefficient | 0.02%/°C |
| Vibration | 2.5g, 10Hz. – 2KHz per MIL-STD-810F Method 514.5 |
| Shock | 20g, peak per MIL-STD-810F Method 516.5 |

## GENERAL SPECIFICATIONS

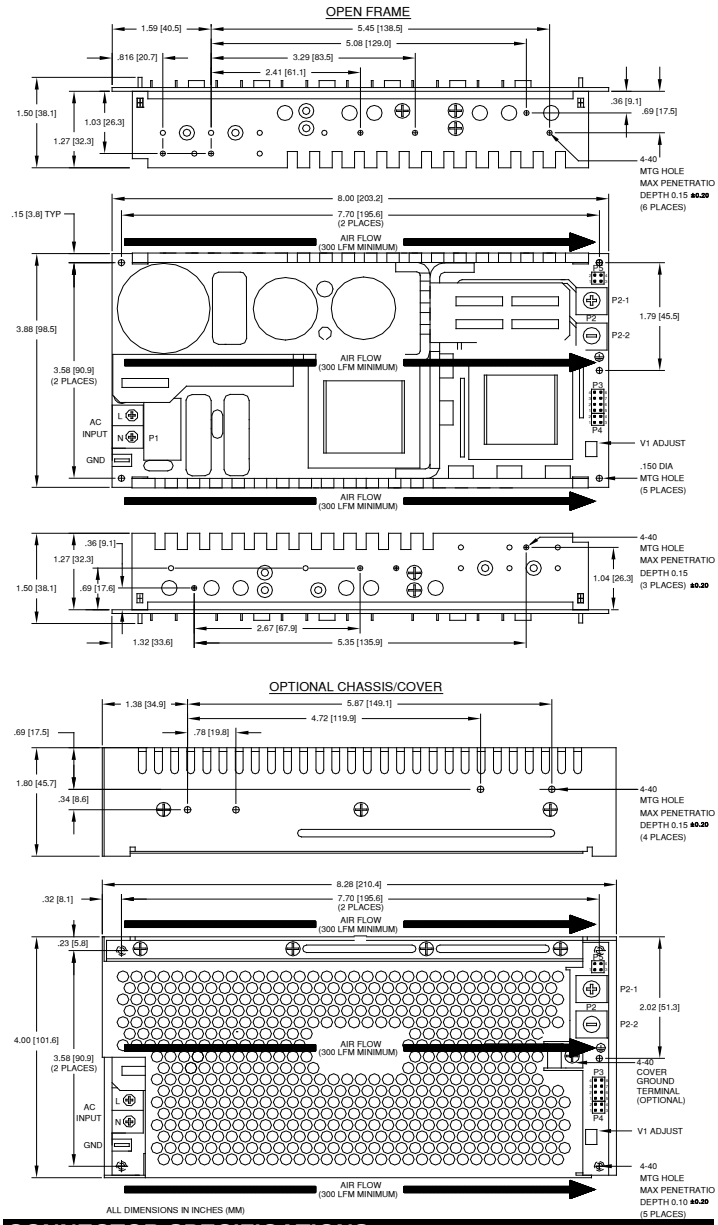
| | |
|---|---|
| Means of Protection | |
| Primary to Secondary | 2MOPP (Means of Patient Protection) |
| Primary to Ground | 1MOOP (Means of Operator Protection) |
| Secondary to Ground | Operational Insulation (Consult factory for 1MOOP or 1MOPP) |
| Dielectric Strength(12) | |
| Reinforced Insulation | 5656 VDC, Primary to Secondary, 1 Sec. |
| Basic Insulation | 2545 VDC, Primary to Ground, 1 Sec. |
| Operational Insulation | 707 VDC, Secondary to Ground, 1 Sec. |
| Leakage Current | |
| Earth Leakage | <300uA NC, <1000uA SFC |
| Touch Current | <100uA NC, <500uA SFC |
| Power Fail Signal | Logic low with input power failure 10 ms minimum prior to output 1 dropping 1%. |
| Remote Inhibit (optional) | Isolated. Contact closure inhibits output. |
| Load Share (optional) | Single wire current sharing with return via negative sense return. Minimum current share load is 10% of each module's output current rating. Maximum output voltage deviation between modules is 5% for 2.5 through 5 V models and 400 mV for remaining models. |
| Standby Power (optional) | Isolated 5 VDC ± 10%, 10mA available with Remote Inhibit Option. |
| Remote Sense | 400mV compensation of output cable losses |
| Mean-Time Between Failures | 100,000 Hours min., MIL-HDBK-217F, 25° C, GB |
| Weight | 2.65 Lbs. Open Frame/ 3.60 Lbs. Chassis and Cover |

## ELECTROMAGNETIC COMPATIBILITY SPECIFICATIONS

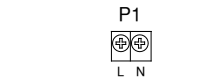
| | | |
|---|---|---|
| Electrostatic Discharge | EN 61000-4-2 | ±6kV Contact/ ±8kV Air Discharge |
| Radiated Electromagnetic Field | EN 61000-4-3 | 80-2500MHz, 10V/m, 80% AM |
| EFT/Bursts | EN 61000-4-4 | ±2 kV |
| Surges | EN 61000-4-5 | ±2 kV Line to Earth/ ±1 kV Line to Line |
| Conducted Immunity | EN 61000-4-6 | .15 to 80MHz, 10V, 80% AM |
| Magnetic Field Immunity | EN 61000-4-8 | 30A/m, 50/60 Hz. |
| Voltage Dips | EN 61000-4-11 | 95% Dip, 10ms<br>30% Dip, 500ms<br>60% Reduction, 1s (Criteria B) |
| Voltage Interruptions | EN 61000-4-11 | 95% Reduction, 5s |
| Radiated Emissions | EN 55011/22, FCC Part 15 | Class B |
| Conducted Emissions | EN 55011/22, FCC Part 15 | Class B |
| Harmonic Current Emissions | EN 61000-3-2 | Compliance |
| Voltage Fluctuations and Flicker | EN 61000-3-3 | Compliance |

*INTEGRATED POWER DESIGNS 300 Stewart Road ■ Wilkes-Barre, PA 18706 ■ Phone: (570) 824-4666 ■ Fax: (570) 824-4843 ■ Email: sales@ipdpower.com ■ Web: www.ipdpower.com*

## NXT-400 SERIES MECHANICAL SPECIFICATIONS

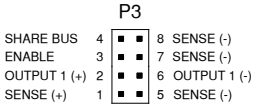



## CONNECTOR SPECIFICATIONS

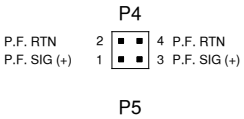



AC Input — Terminal block with 6-32 screws on 0.325 centers mates with #6, spade terminals. (8 in-lb max)

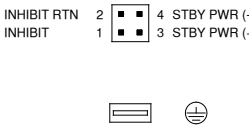

DC Output — 10-32 screw down terminal mates with #10 ring tongue terminal. (10 in-lb Max)




Load Share, Sense — .100 friction lock header mates with Molex 22-55-2081 or equivalent crimp terminal housing with Molex 71851 or equivalent crimp terminal.




Power Fail — .100 friction lock header mates with Molex 22-55-2041 or equivalent crimp terminal housing with Molex 71851 or crimp equivalent terminal.



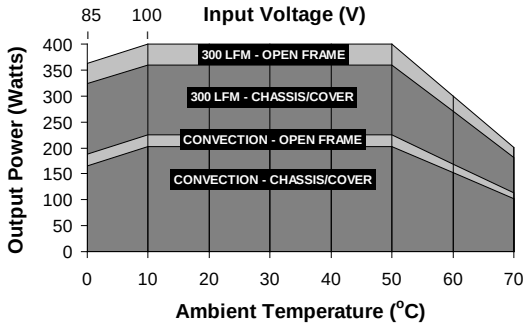

Inhibit, Standby Power — .100 friction lock header mates with Molex 22-55-2041 or equivalent crimp terminal housing with Molex 71851 or equivalent crimp terminal.

Ground — .187 quick disconnect terminal.

## APPLICATIONS INFORMATION

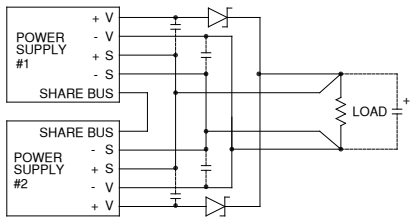
1. Sufficient area must be provided around power supply to allow natural movement of air to develop in convection cooled applications.
2. 300 linear feet per minute (minimum) of airflow must be maintained along all outside surfaces of exposed heatsinks or chassis. See recommended air flow diagram as a guideline.
3. Generally, adequate cooling is provided when semiconductor case temperatures do not exceed 75° C rise and transformer temperature does not exceed 80° C rise at any specified ambient temperature.
4. This product is intended for use as a professionally installed component within information technology, industrial and medical equipment and is not intended for stand alone operation. Common RF shielding precautions may need to be taken to assure emissions compliance. Refer to operating instructions for additional information.
5. This product includes only one fuse in the input circuit. In consideration of Clause 8.11.5 of IEC 60601-1:2005, a second fuse may be required in the end product.
6. Low forward voltage drop oring diodes must be used in all load sharing applications in 2.5 through 15 Volt models. Oring diodes must be used on 24 through 48 Volt models used in fault tolerant applications but are optional in power boosting applications. Oring diode power dissipation must be subtracted from the maximum output power rating of each model.
7. Current carrying conductors in load sharing applications must be short and symmetrical. Remote sense conductors should be a twisted pair. The use of an appropriately rated low impedance capacitor across the load will increase noise immunity.
8. Refer to Load Share Evaluation Board data sheet (page 58) for additional load share applications information.
9. Remote sense terminals may be used to compensate for cable losses up to 400 mV depending on model. The use of a twisted pair, decoupling capacitors and an appropriately rated low impedance capacitor connected across the load will increase noise immunity.
10. A load equal to 5% rated output power must be maintained when using standby power option. An external electrolytic capacitor across standby power output may be used to improve transient response.
11. Peak to peak output ripple and noise is measured directly at the output terminals of the power supply, without the use of the probe ground lead or retractable tip, 20 MHz bandwidth.
12. This product was type tested and safety certified using the dielectric strength test voltages listed in Table 6 of IEC 60601-1:2005. In consideration of Clause 8.8.3, care must be taken to insure that the voltage applied to a reinforced insulation does not overstress different types and levels of insulation. Primary and secondary to ground capacitors may need to be disconnected prior to performing a dielectric strength test on the power supply or the end product. It is highly recommended that the DC test voltages listed in DVB.1, Annex DVB of UL 60601-1 1st Edition are not exceeded during a production-line dielectric strength test of the assembled end product. Please consult factory for further information.
13. This power supply has been safety approved and final tested using a DC dielectric strength test. Please consult factory before performing an AC dielectric strength test.
14. Maximum screw penetration into bottom chassis mounting holes is .100 inches.
15. Maximum screw penetration into side chassis mounting holes is .150 inches.
16. To comply with emissions specifications, all five mounting hole pads must be electrically connected to a common metal chassis. Chassis/cover option recommended and should be grounded.

## MAX Pout vs. AMBIENT TEMPERATURE/INPUT VOLTAGE




Derating requirements – Chart above applies to models 1003 thru 1008 only. 400 Watts 300 LFM forced air, open frame. 225 Watts convection cooled open frame. Derate 10% with chassis and cover. Derate 2.5 $W_{OUT}$ / 1 $V_{IN}$ below 100 $V_{IN}$ and between 100 $V_{IN}$ and 85 $V_{IN}$. Use larger of the two deratings when using chassis/cover below 100 $V_{IN}$. Derate output power linearly to 50% between 50° and 70° C

## TYPICAL LOAD SHARE/REMOTE SENSE APPLICATION




REV.F 07/08/2013