



**Features**

- RoHS lead-solder exemption
- 400W output power with currents over 100 Amps
- 85% efficiency (typical)
- 5-output construction
- Isolated V2 and V3 outputs
- Standby output of 5V @ 2A
- Fits 1U chassis height constraints
- No minimum load requirement
- Active current-share capabilities with redundant capabilities on the four main outputs
- Patented high-efficiency design
- Meets European power factor requirements
- Excellent load transient response
- Redundancy without use of ORing diode

**Description**

Designed to meet the stringent requirements of today's high-speed circuitry, Power-One's NET2 Series is an excellent compact power solution for low-voltage, high-current applications. The NET2's high efficiency is achieved through the use of synchronous rectification and a newly-patented "Soft Transition Forward Converter".

The NET2's rectification method lowers output losses, reduces system cooling requirements (allowing greater power in a smaller package), and eliminates minimum-load requirements.

Advanced surface-mount design and packing technology reduce the NET2's height to 1.59" (40.3mm) to fit in 1U applications. NET2's high-performance active power factor circuitry meets EN61000-3-2 requirements for compliance with European Power Line Harmonic Requirements for 2001. A multifunctional output terminal allows connection to #8 ring lugs, 0.25" quick disconnects, cable connectors, and PCB-mounted connectors.

**Multiple-Output Model Selection – 400W WITH 460 LFM FORCED-AIR COOLING**

| MODEL                      | OUTPUT VOLTAGE         | ADJUSTMENT RANGE | OUTPUT CURRENT | LINE REGULATION | LOAD & CROSS-REGULATION | RIPPLE & NOISE Pk-Pk (NOTE 2) | INITIAL SETTING ACCURACY (NOTE 3) |
|----------------------------|------------------------|------------------|----------------|-----------------|-------------------------|-------------------------------|-----------------------------------|
| <b>NET2-4350</b> (Note1)   | V1 +3.3V               | +5%, -2%         | 55A            | 0.6%            | 1%                      | 50mV                          | +40mV, -10mV                      |
|                            | V2 12V                 | +5%, -5%         | 5A             | 0.5%            | 1%                      | 120mV                         | ± 70mV                            |
|                            | V3 12V                 | +5%, -5%         | 5A             | 0.5%            | 1%                      | 120mV                         | ± 70mV                            |
|                            | V4 +5V                 | +5%, -2%         | 40A            | 0.5%            | 1%                      | 50mV                          | +50mV, -10mV                      |
|                            | V5 +5.2V <sub>SB</sub> | FIXED            | 2A             | 0.5%            | 4%                      | 50mV                          | ± 110mV                           |
| <b>NET2-4231</b> (Note1,4) | V1 +3.3V               | +5%, -2%         | 55A            | 0.6%            | 1%                      | 50mV                          | +40mV, -10mV                      |
|                            | V2 12V                 | +5%, -5%         | 5A             | 0.5%            | 1%                      | 120mV                         | ± 70mV                            |
|                            | V3 1.8V                | +5%, -2%         | 15A            | 0.6%            | 1%                      | 120mV                         | ± 70mV                            |
|                            | V4 +2.5V               | +5%, -2%         | 55A            | 0.6%            | 1%                      | 50mV                          | +30mV, -10mV                      |
|                            | V5 +5.2V <sub>SB</sub> | FIXED            | 2A             | 0.5%            | 4%                      | 50mV                          | ± 110mV                           |

- NOTES:** 1) V1 + V2, or V3 + V4 must not exceed 200W.  
 2) Maximum peak-to-peak noise for a 20 MHz bandwidth.  
 3) Initial set points: V1 @ 40A, V2 @ 4A, V3 @ 4A, V4 @ 30A, and V5 @ 1A.  
 4) Consult factory for availability.

### Input Specifications

| PARAMETER            | CONDITIONS/DESCRIPTION  | MIN  | TYP | MAX | UNITS |
|----------------------|---|------|-----|-----|-------|
| Input Voltage - AC   | Continuous input range.   | 85   |     | 264 | VAC   |
| Input Frequency      | AC input.   | 47   |     | 63  | Hz    |
| Hold-up Time         | After last AC line peak at 400 watts.                             | 20   |     |     | ms    |
| Input Current        | 85 VAC at full rated load.  |      |     | 7.0 | ARMS  |
| Input Protection     | Non-user serviceable internally located AC input line fuse.       |      |     |     |       |
| Inrush Surge Current | Internally limited by thermistor. Vin = 220 VAC, one cycle, 25°C. |      |     | 35  | APK   |
| Power Factor         | Per EN61000-3-2 (Over the entire input range and above 60W load). | 0.95 |     |     | W/VA  |

### Output Specifications

| PARAMETER              | CONDITIONS/DESCRIPTION  | MIN                        | TYP      | MAX        | UNITS |
|------------------------|---|----------------------------|----------|------------|-------|
| Efficiency             | Full Rated Load, 115 VAC. Varies with distribution of loads among outputs.  |                            | 85       |            | %     |
| Ripple and Noise       | Full load, 20 MHz bandwidth.  | See Model Selection Charts |          |            |       |
| Output Power           | With 460 LFM forced-air cooling (25 CFM through the power supply opening),<br>V1+V2+V3+V4+V5:<br>V1+V2 or V3+V4:  |                            |          | 400<br>200 | Watts |
| Overshoot / Undershoot | Output voltage overshoot/undershoot at turn-on.   |                            |          | 3.5        | %     |
| Regulation             | Varies by output. Regulation includes: line changes over the specified input range and changes in load between 0% and 100% load.                          | See Model Selection Charts |          |            |       |
| Transient Response     | Recovery time, to within 1% of initial set point due to a 50% load change in the load range of 10 to 100%; 3.5% or 100mV deviation, whichever is greater. | V1/V4/V5:<br>V2/V3         | 1<br>0.5 |            | ms    |
| Turn-on Delay          | Time required for initial output voltage stabilization.   |                            | 1.5      | 2          | Sec   |
| Turn-on Rise Time      | Time required for output voltage to rise from 10% to 90%.   |                            | 20       |            | ms    |

### Interface Signals and Internal Protection

| PARAMETER                  | CONDITIONS/DESCRIPTION  | MIN | TYP | MAX | UNITS |
|----------------------------|---|-----|-----|-----|-------|
| Overvoltage Protection     | Overvoltage protection on all outputs except V5. Unit latches off when overvoltage is detected. AC input must be recycled to reset. V5 is protected by a 6.2V ±5%, 2W Zener diode.                      | 120 |     | 140 | %     |
| Overload Protection        | Fully protected against output overload and short circuit. Automatic recovery upon removal of overload condition. All outputs are individually current limited.   |     |     |     |       |
| Overtemperature Protection | Power supply shuts down due to excessive internal overtemperature at the output converter's primary switching transistors. Power supply resets automatically upon removal of the overtemperature cause. |     |     |     |       |
| Output Good                | TTL-compatible global Output Good signal. The signal is active when any of the V1-V4 outputs drop >14% below nominal. Source impedance is 1kΩ.  |     |     |     |       |
| Input Power Fail Warning   | Open collector signal. Time before regulation dropout due to loss of input power. May be used as independent PSOK signal in redundant applications.   | 5   |     |     | ms    |
| Current Share              | Available on all outputs except V5. Accuracy of shared current with up to two parallel units. Single wire current share is provided. For paralleling more than two units, consult factory.              |     | 10  |     | %     |
| Remote Sense               | Available on all outputs except V5. Total voltage compensation for cable losses with respect to the main output.  |     |     | 500 | mV    |

**Safety, Regulatory, and EMI Specifications**

| PARAMETER                    | CONDITIONS/DESCRIPTION  | MIN  | TYP | MAX | UNITS |
|------------------------------|---|--|-----|-----|-------|
| Agency Approvals             | UL60950.<br>CSA 22.2, NO. 60950-00 (cUL).<br>EN60950-1 (TÜV).<br>IEC60950-1       | NET2-4350 Approved; NET2-4231 Pending<br>NET2-4350 Approved; NET2-4231 Pending<br>NET2-4350 Approved; NET2-4231 Pending<br>NET2-4350 Approved; NET2-4231 Pending |     |     |       |
| Dielectric Withstand Voltage | Input to output per EN60950.  | 2600   |     |     | VDC   |
| Electromagnetic Interference | FCC CFR title 47 Part 15 Sub-Part B - Conducted.<br>EN55022 / CISPR 22 Conducted. | B<br>B   |     |     | Class |
| ESD Susceptibility           | Per EN61000-4-2, level 4. Contact discharge: ±10%<br>Air discharge:               | 8<br>10  |     |     | kV    |
| Radiated Susceptibility      | Per EN61000-4-3, level 3. Frequency 0.8 - 1.0 GHz, 80% AM @ 1 kHz                 | 10   |     |     | V/M   |
| EFT/Burst                    | Per EN61000-4-4, level 3.   | ±2   |     |     | kV    |
| Input Transient Protection   | Per EN61000-4-5, class 3.   | Line to Line   | 1   |     | kV    |
|                              |   | Line to Ground   | 2   |     |       |
| Ground Leakage               | UL60950/EN60950/CSA 6950-00   | @254VAC  |     |     | 1 mA  |

**Environmental Specifications**

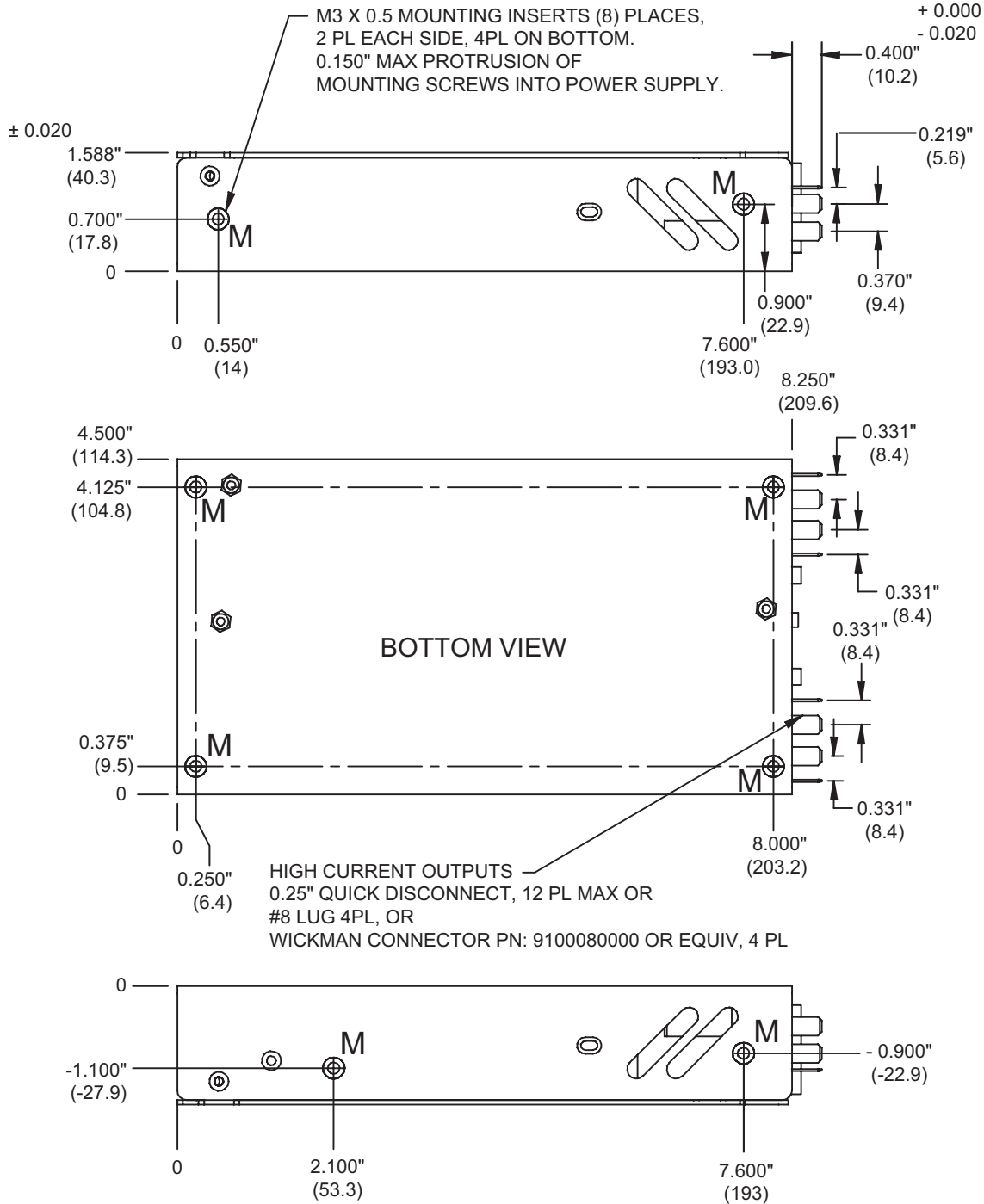
| PARAMETER               | CONDITIONS/DESCRIPTION  | MIN | TYP    | MAX        | UNITS              |
|-------------------------|---|-----|--------|------------|--------------------|
| Altitude                | Operating.<br>Non-Operating.  |     |        | 10k<br>40k | ASL Ft.<br>ASL Ft. |
| Operating Temperature   | From 50°C to 70°C derate each output and total power to 50% of rating at 70°C. At 100% load   | 0   |        | 50         | °C                 |
| Storage Temperature     |   | -40 |        | 85         | °C                 |
| Temperature Coefficient | 0°C to 70°C (after 15-minute warmup).   |     | ± 0.02 | ± 0.05     | %/°C               |
| Relative Humidity       | Non-Condensing.   | 5   |        | 95         | %RH                |
| Shock                   | Operating: Half-sine, 10 ± 3ms duration; one positive and one negative shock in each of the three perpendicular axes for a total of 6 shocks.   | 10  |        | 20         | GPK                |
|                         | Non-Operating: Half-sine, 10 ± 3ms duration; one positive AND one negative shock in each of the three perpendicular axes for a total of 6 shocks.   | 30  |        | 40         | GPK                |
| Vibration               | Operating: Logarithmic sweep, 1 octave/min 5-2000-5 Hz vertical, lateral, and longitudinal axes;<br>5-32 Hz, 0.02" double amplitude;<br>32-2000 Hz<br>2000-32 Hz<br>32-5 Hz double amplitude. |     | 1<br>1 |            | Gpk<br>Gpk         |
|                         | Non-Operating: Random 1 hour/axis, vertical, lateral, and max longitudinal over 10-2000 Hz.   |     |        | 6.15       | Grms               |

**Mechanical**

| DESCRIPTION     | NOTES  | SIZE IMPACT   |
|-----------------|--|---|
| Metric Mounting | M3 x 0.5 mounting inserts: 3 mounting surfaces |   |
| Chassis Size    |  | 8.25" x 4.50" x 1.59"<br>(209.6mm x 114.3mm x 40.4mm) |

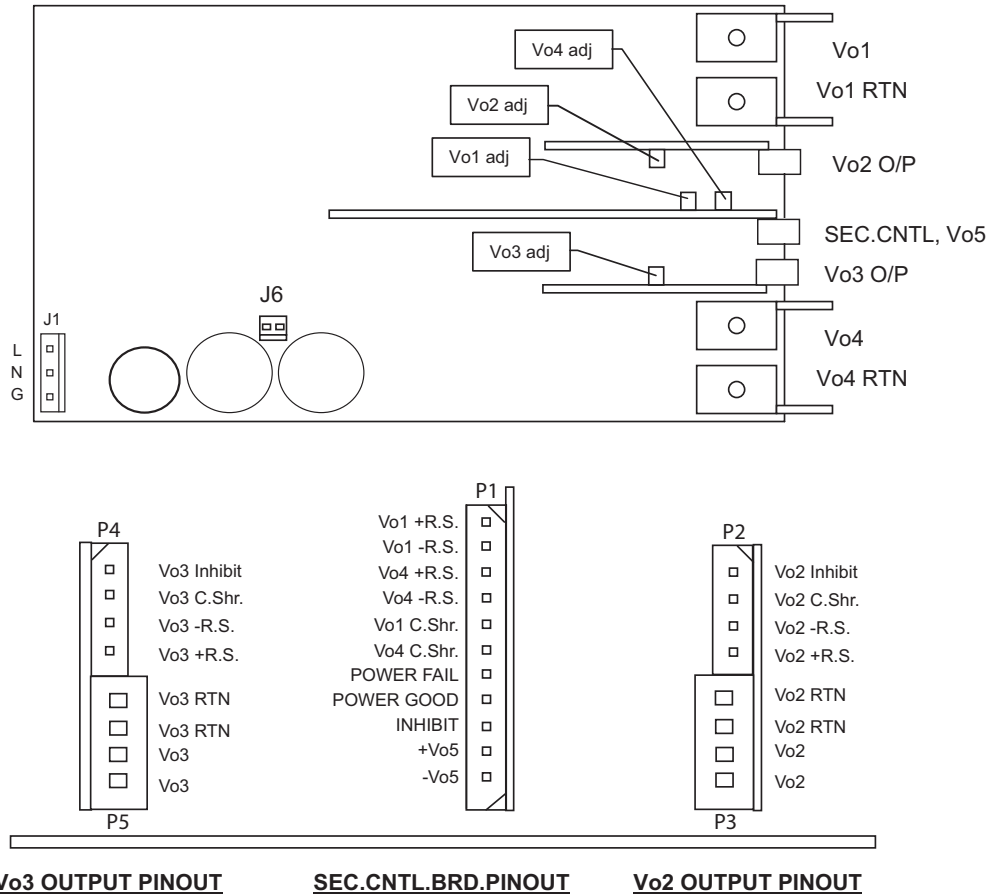
**Mechanical Drawing**

**NOTE:** METRIC DIMENSIONS ARE SHOWN IN BRACKETS



**NOTE:** TOLERANCE ( .XXX = ± 0.010 UNLESS OTHERWISE SPECIFIED)

**INPUT & OUTPUTS**



**Vo3 OUTPUT PINOUT**

**SEC.CNTL.BRD.PINOUT**

**Vo2 OUTPUT PINOUT**

**Connectors**

The NET2 uses #8-32 screw terminal and/or 0.25" faston connections for outputs 1 and 4, and Molex 5264-N Series connectors (50-37-5093) for auxiliary outputs and control signals. For the AC input, the NET2 uses a Molex 41694/2139 (09-50-3051) series connector.

**NET2-4350**

**NET2-4231**

|      |         |            |
|------|---------|------------|
| P1   | Housing | 50-37-5113 |
|      | Pins    | 08-70-1039 |
| P2   | Housing | 50-37-5043 |
| & P4 | Pins    | 08-70-1039 |
| P3   | Housing | 39-01-4041 |
| & P5 | Pins    | 39-00-0038 |

NOTE: Part numbers are MOLEX; equivalents are acceptable.

NUCLEAR AND MEDICAL APPLICATIONS - Power-One products are not designed, intended for use in, or authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the respective divisional president of Power-One, Inc.

TECHNICAL REVISIONS - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.