Features

◆ Highest power density in 5.0” x 3.0” footprint
◆ Supplies 200 W (convection cooling!)
◆ Highest efficiency up to 95%
◆ Operating temperature range –25°C to +70°C
◆ Universal input 85 – 264 VAC
◆ Compliance with EN 61000-3-2
◆ Power Back immunity
◆ Low leakage current
◆ Protection class I and class II
◆ 3-year product warranty

The new TOP-200 Series AC/DC Power Supplies feature the highest power rating in the industry standard 3.0” x 5.0” (76.2 x 127 mm) footprint. They can supply up to 200 W output power with convection cooling over an industrial operating temperature range of –25°C to +70°C. This performance could be realized by a state of the art design providing an extremely high efficiency of >90 % which eliminates the need for a dedicated power supply cooling fan.

Compliance with global safety and EMC standards qualify these power supplies for worldwide markets. Approved for Class I and Class II applications, these switchers are suitable for industrial and IT systems but also for consumer products. High reliability is provided by use of industrial quality grade components and an excellent thermal management. This product offers an interesting power supply solution for many space and cost critical applications in commercial and industrial electronic equipment.

Models

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Output Power max.</th>
<th>Output Voltage (fixed)</th>
<th>Output Current max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOP 200-112</td>
<td>200 W</td>
<td>12 VDC</td>
<td>16 A</td>
</tr>
<tr>
<td>TOP 200-115</td>
<td></td>
<td>15 VDC</td>
<td>13 A</td>
</tr>
<tr>
<td>TOP 200-124</td>
<td></td>
<td>24 VDC</td>
<td>8.3 A</td>
</tr>
<tr>
<td>TOP 200-148</td>
<td></td>
<td>48 VDC</td>
<td>4.2 A</td>
</tr>
</tbody>
</table>
# Input Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input voltage</td>
<td>– nominal 120 – 240 VAC (universal input)</td>
</tr>
<tr>
<td></td>
<td>– AC input range 85 – 264 VAC with derating at low input see power derating graph 1</td>
</tr>
<tr>
<td>Input frequency</td>
<td>47 – 63 Hz</td>
</tr>
<tr>
<td>Harmonic limits</td>
<td>EN 61000-3-2, class A</td>
</tr>
<tr>
<td>Zero load power consumption</td>
<td>3.6 W</td>
</tr>
<tr>
<td>Input protection</td>
<td>T4 A internal fuses (line and neutral)</td>
</tr>
<tr>
<td>Recommended circuit breaker</td>
<td>6 A (characteristic C) or slow blow fuse. For protection class II use two fuses (line and neutral)</td>
</tr>
</tbody>
</table>

## Output Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage set accuracy</td>
<td>TOP 200-112: min. 11.9 V, max. 12.3 V, TOP 200-115: min. 14.9 V, max. 15.3 V, TOP 200-124: min. 23.8 V, max. 24.2 V, TOP 200-148: min. 48.0 V, max. 49.3 V</td>
</tr>
<tr>
<td>Regulation</td>
<td>1.0 % max.</td>
</tr>
<tr>
<td>Ripple and noise (20MHz Bandwidth)</td>
<td>&lt;120 mVp-p, &lt;150 mVp-p for 48 VDC models</td>
</tr>
<tr>
<td>Overvoltage protection</td>
<td>12 &amp; 15 VDC models: &gt;150 % of Vout, 24 &amp; 48 VDC models: &gt;125 % of Vout</td>
</tr>
<tr>
<td>Power back immunity</td>
<td>12 VDC model: 16 V (8 V for 1 sec.), 15 VDC model: 20 V (23 V for 1 sec.), 24 VDC model: 35 V (40 V for 1 sec.), 48 VDC model: 63 V (68 V for 1 sec.)</td>
</tr>
<tr>
<td>Overload protection by current limit</td>
<td>at 120 – 150 % Iout max.</td>
</tr>
<tr>
<td>Short circuit protection</td>
<td>foldback (automatic recovery)</td>
</tr>
<tr>
<td>Capacitive load</td>
<td>12 &amp; 15 VDC models: 15'000 µF max., 24 VDC model: 4'000 µF max., 48 VDC model: 1'000 µF max.</td>
</tr>
</tbody>
</table>

## General Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>– derating –25°C to +70°C (convection cooling) see power derating graph 2</td>
</tr>
</tbody>
</table>

## Power derating

![Graph 1: In respect to input voltage](image1.png)
![Graph 2: In respect to ambient temperature](image2.png)
# General Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Humidity</strong></td>
<td>0 – 95 % rel. H max.</td>
</tr>
<tr>
<td><strong>Efficiency</strong></td>
<td></td>
</tr>
<tr>
<td>- Vin = 115 VAC</td>
<td>12 &amp; 15 VDC models: 88 – 91 %</td>
</tr>
<tr>
<td>- Vin = 230 VAC</td>
<td>12 &amp; 15 VDC models: 90 – 93 %</td>
</tr>
<tr>
<td></td>
<td>24 &amp; 48 VDC models: 90 – 93 %</td>
</tr>
<tr>
<td></td>
<td>24 &amp; 48 VDC models: 92 – 95 %</td>
</tr>
<tr>
<td><strong>Switching frequency</strong></td>
<td>100 kHz typ. (pulse width modulation)</td>
</tr>
<tr>
<td><strong>Hold-up time</strong></td>
<td>10 ms typ.</td>
</tr>
<tr>
<td><strong>Start-up time</strong></td>
<td></td>
</tr>
<tr>
<td>- Vin = 115 VAC</td>
<td>&lt;3.0s</td>
</tr>
<tr>
<td>- Vin = 230 VAC</td>
<td>&lt;2.0s</td>
</tr>
<tr>
<td><strong>Remote On/Off</strong></td>
<td></td>
</tr>
<tr>
<td>- On:</td>
<td>open contacts on J3</td>
</tr>
<tr>
<td>- Off:</td>
<td>see J3 remote On/Off function on last page</td>
</tr>
<tr>
<td><strong>Isolation voltage</strong></td>
<td></td>
</tr>
<tr>
<td>- Input / Output</td>
<td>3000 VAC</td>
</tr>
<tr>
<td>- Input / Field Ground</td>
<td>1500 VAC</td>
</tr>
<tr>
<td>- Output / Field Ground</td>
<td>500 VAC</td>
</tr>
<tr>
<td><strong>Isolation resistance</strong></td>
<td></td>
</tr>
<tr>
<td>(at 500 VDC)</td>
<td>100 Mohm min.</td>
</tr>
<tr>
<td><strong>Earth leakage current</strong></td>
<td>500 µA max.</td>
</tr>
<tr>
<td><strong>Reliability, calculated MTBF</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.tracopower.com/overview/top200">www.tracopower.com/overview/top200</a></td>
</tr>
<tr>
<td><strong>Safety class (for built in use only)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>class I, class II prepared with second fuse</td>
</tr>
<tr>
<td><strong>Electromagnetic compatibility</strong> (EMC), emissions</td>
<td>EN 55022, class B (conductive plane to be connected to field ground)</td>
</tr>
<tr>
<td>- Conducted input RI suppression</td>
<td>IEC/EN 61000-3-2, class A</td>
</tr>
<tr>
<td>- Harmonic current emissions</td>
<td>IEC/EN 61000-4-3, 20V/m criteria A</td>
</tr>
<tr>
<td></td>
<td>IEC/EN 61000-4-4, ±2kV criteria B</td>
</tr>
<tr>
<td></td>
<td>IEC/EN 61000-4-5, ±1kV/±2kV criteria B</td>
</tr>
<tr>
<td></td>
<td>IEC/EN 61000-4-6, 10V criteria A</td>
</tr>
<tr>
<td></td>
<td>IEC/EN 61000-4-8, 100A/m criteria A</td>
</tr>
<tr>
<td></td>
<td>IEC/EN 61000-4-11</td>
</tr>
<tr>
<td></td>
<td>Semi F47-0706</td>
</tr>
<tr>
<td><strong>Electromagnets compatibility</strong> (EMC), immunity</td>
<td></td>
</tr>
<tr>
<td>- RF field immunity</td>
<td>IEC/EN 61000-4-3, 20V/m criteria A</td>
</tr>
<tr>
<td>- Electrical fast transients/burst immunity</td>
<td>IEC/EN 61000-4-4, ±2kV criteria B</td>
</tr>
<tr>
<td>- Surge</td>
<td>IEC/EN 61000-4-5, ±1kV/±2kV criteria B</td>
</tr>
<tr>
<td>- Conducted RF</td>
<td>IEC/EN 61000-4-6, 10V criteria A</td>
</tr>
<tr>
<td>- Magnetic field</td>
<td>IEC/EN 61000-4-8, 100A/m criteria A</td>
</tr>
<tr>
<td>- Voltage dip</td>
<td>IEC/EN 61000-4-11</td>
</tr>
<tr>
<td>- Voltage Sag immunity</td>
<td>Semi F47-0706</td>
</tr>
<tr>
<td><strong>Safety approvals and Certification</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>UL 60950-1, 2nd Ed + AMI</td>
</tr>
<tr>
<td></td>
<td>CSA 60950-1-07-2nd Ed</td>
</tr>
<tr>
<td></td>
<td>IEC 60950-1:2005 (2nd Edition)</td>
</tr>
<tr>
<td></td>
<td>EN 60950-1:2006 + Am 1:2010 + Am</td>
</tr>
<tr>
<td><strong>Certification documents</strong></td>
<td><a href="http://www.tracopower.com/overview/top200">www.tracopower.com/overview/top200</a></td>
</tr>
<tr>
<td><strong>Environment</strong></td>
<td></td>
</tr>
<tr>
<td>- Vibration acc: IEC 60068-2-6;</td>
<td>3 axis, sine sweep, 10 – 55Hz, 0.075 mm</td>
</tr>
<tr>
<td>- Shock acc: IEC 60068-227</td>
<td>3 axis, 15g half sine, 11ms</td>
</tr>
<tr>
<td><strong>Environmental compliance</strong></td>
<td></td>
</tr>
<tr>
<td>- Reach</td>
<td><a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a></td>
</tr>
<tr>
<td>- RoHS</td>
<td>RoHS directive 2011/65/EU</td>
</tr>
<tr>
<td><strong>Connection</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>pin connector (Molex)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>315 g (8.93 oz)</td>
</tr>
</tbody>
</table>

All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

www.tracopower.com
Dimensions

<table>
<thead>
<tr>
<th>J1</th>
<th>Input</th>
<th>Pin</th>
<th>AC in L</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>AC in N</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>J2</th>
<th>Output</th>
<th>Pin</th>
<th>+ Vout</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>+ Vout</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>+ Vout</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>- Vout</td>
<td>4</td>
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<tr>
<td></td>
<td></td>
<td>5</td>
<td>- Vout</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>- Vout</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>J3</th>
<th>Remote</th>
<th>Pin</th>
<th>1</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

J1: Molex Series 41791
mates with Molex crimp terminal: 08-52-0072
and terminal housing: 09-50-3031

J2: Molex Series 41791
mates with Molex crimp terminal: 08-52-0072
and terminal housing: 09-50-3061

J3: Molex Series KK
mates with Molex crimp terminal: 08-50-0032
and terminal housing: 22-01-2025

PE: Faston
mates with TAB-6.3 [1/4”]

PE to connect to protective earth if used as safety class I unit

J3 remote On/Off function:
On: pin 1 & 2 open

Off:
- Pin 1 connected to secondary ground.
- External current source of 10 mA
- External voltage source. Use external serial resistor (R_{ext.}) in reference to applied voltage (U_{ext.}) as follows:
  - TOP 200-112: \( R_{ext.} \text{ [Ohm]} = \left( \frac{U_{ext.} - 1.2}{0.01} \right) - 150 \)
  - TOP 200-115: \( R_{ext.} \text{ [Ohm]} = \left( \frac{U_{ext.} - 1.2}{0.01} \right) - 240 \)
  - TOP 200-124: \( R_{ext.} \text{ [Ohm]} = \left( \frac{U_{ext.} - 1.2}{0.01} \right) - 430 \)
  - TOP 200-148: \( R_{ext.} \text{ [Ohm]} = \left( \frac{U_{ext.} - 1.2}{0.01} \right) - 800 \)

Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at www.tracopower.com