AC/DC Power Supply

• 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.

<table>
<thead>
<tr>
<th>Models</th>
<th>Order Code</th>
<th>Output Power</th>
<th>Output Voltage</th>
<th>Output Current</th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TOP 200-112</td>
<td>200 W</td>
<td>12 VDC</td>
<td>16'000 mA</td>
<td>93%</td>
</tr>
<tr>
<td></td>
<td>TOP 200-115</td>
<td></td>
<td>15 VDC</td>
<td>13'000 mA</td>
<td>93%</td>
</tr>
<tr>
<td></td>
<td>TOP 200-124</td>
<td></td>
<td>24 VDC</td>
<td>8'200 mA</td>
<td>95%</td>
</tr>
<tr>
<td></td>
<td>TOP 200-148</td>
<td></td>
<td>48 VDC</td>
<td>4'200 mA</td>
<td>95%</td>
</tr>
</tbody>
</table>

Options

on demand (backorder with MOQ non stocking item)

- Encased version: www.tracopower.com/overview/top200c
**Input Specifications**

**Input Voltage**
- Operational Range: 85 - 264 VAC (Full Range)
- Rated Range: 100 - 240 VAC (Full Range)

**Input Frequency**
- Operational Range: 47 - 63 Hz
- Certified: 50/60 Hz

**Power Consumption**
- No load & Vin = 230 VAC: 4’000 mW max.
- No load & Vin = 115 VAC: 5’300 mW max.

**Input Inrush Current**
- At 230 VAC: 40 A max.

**Power Factor**
- At 230 VAC: 0.98 min. (Active Power Factor Correction)

**Input Protection**
- T 4 A (Internal Fuse in L & N)

**Recommended Input Fuse**
- 6’000 mA (Slow blow)
  (The need of an external fuse has to be assessed in the final application.)

**Output Specifications**

**Voltage Set Accuracy**
±3% max.

**Regulation**
- Input Variation (Vmin - Vmax)
  - 1% max.
- Load Variation (0 - 100%)
  - 1% max.

**Ripple and Noise**
(20 MHz Bandwidth)
- 12 VDC model: 120 mVp-p max.
- 15 VDC model: 120 mVp-p max.
- 24 VDC model: 120 mVp-p max.
- 48 VDC model: 150 mVp-p max.

**Capacitive Load**
- 12 VDC model: 15’000 µF max.
- 15 VDC model: 15’000 µF max.
- 24 VDC model: 4’000 µF max.
- 48 VDC model: 1’000 µF max.

**Minimum Load**
Not required

**Temperature Coefficient**
±0.02 %/K max.

**Hold-up Time**
- At 230 VAC: 10 ms min.
- At 115 VAC: 10 ms min.

**Start-up Time**
- At 230 VAC: 2’000 ms max.
- At 115 VAC: 3’000 ms max.

**Short Circuit Protection**
Automatic recovery
60% typ. of Iout nom.

**Overload Protection**
Foldback Mode

**Output Current Limitation**
120 - 150% of Iout max.

**Overvoltage Protection**
150% typ. of Vout nom.
(depending on model)
- 20 V typ. (12 Vout model)
- 25 V typ. (15 Vout model)
- 35 V typ. (24 Vout model)
- 60 V typ. (48 Vout model)

**Transient Response**
- Peak Variation
  - 600 mV max. (10% to 90% Load Step)
- Response Time
  - 20’000 µs max. (10% to 90% Load Step)

**Safety Specifications**

**Safety Standards**
- IT / Multimedia Equipment
  - EN 60950-1
  - EN 62368-1
  - IEC 60950-1
  - IEC 62368-1
  - UL 60950-1

- Certification Documents
  - www.tracopower.com/overview/top200

**Protection Class**
Class I & II [Prepared: Reinforced Insulation]

**Pollution Degree**
PD 2

**Over Voltage Category**
OVC II

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

<table>
<thead>
<tr>
<th>EMI Emissions</th>
<th>2.5 (\mu)A/(\mu)s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conducted Emissions</td>
<td>EN 61000-4-3, 20 V/m, perf. criteria A</td>
</tr>
<tr>
<td>Radiated Emissions</td>
<td>EN 61000-4-4, ±2 kV, perf. criteria B</td>
</tr>
<tr>
<td>Harmonic Current Emissions</td>
<td>EN 61000-2-1, class A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EMS Immunity</th>
<th>230 VAC / 50 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF Electromagnetic Field</td>
<td>EN 61000-4-3, 20 V/m, perf. criteria A</td>
</tr>
<tr>
<td>EFT (Burst) / Surge</td>
<td>EN 61000-4-4, ±2 V, perf. criteria B</td>
</tr>
<tr>
<td>L to L</td>
<td>EN 61000-4-5, ±1 kV, perf. criteria B</td>
</tr>
<tr>
<td>L to PE</td>
<td>EN 61000-4-6, 10 Vrms, perf. criteria A</td>
</tr>
<tr>
<td>Conducted RF Disturbances</td>
<td>EN 61000-4-8, 100 A/m, perf. criteria A</td>
</tr>
<tr>
<td>PF Magnetic Field</td>
<td>Continuous: 230 VAC / 50 Hz</td>
</tr>
<tr>
<td>Voltage Dips &amp; Interruptions</td>
<td>115 VAC / 60 Hz</td>
</tr>
</tbody>
</table>

## General Specifications

| Relative Humidity | 95% max. (non-condensing) |
| Temperature Ranges | - Operating Temperature: -25°C to +70°C |
|                   | - Storage Temperature: -40°C to +80°C |
| Power Derating | - High Temperature: 2 %/K above 40°C (12 & 15 Vout models) |
|                  | - Low Input Voltage: 2 %/K above 50°C (24 & 48 Vout models) |
|                  | 1 %/V below 115 VAC (12 & 15 Vout models) |
|                  | 1.5 %/V below 108 VAC (24 & 48 Vout models) |
| Cooling System | Natural convection (20 LFM) |
| Remote Control | Voltage Controlled Remote: See application note: [www.tracopower.com/overview/top200](http://www.tracopower.com/overview/top200) |
|                  | Current Controlled Remote: See application note: [www.tracopower.com/overview/top200](http://www.tracopower.com/overview/top200) |
| Altitude During Operation | 2'000 m max. |
| Switching Frequency | 100 Khz typ. (PWM) |
| Insulation System | Reinforced Insulation |
| Isolation Test Voltage | - Input to Output, 60 s: 3'000 VAC |
|                       | - Input to Case or PE, 60 s: 1'500 VAC |
|                       | - Output to Case or PE, 60 s: 500 VAC |
| Creepage | - Input to Output: 7 mm min. |
|           | - Input to Case or PE: 4 mm min. |
|           | - Output to Case or PE: 1 mm min. |
| Clearance | - Input to Output: 5 mm min. |
|           | - Input to Case or PE: 2.5 mm min. |
|           | - Output to Case or PE: 0.5 mm min. |
| Isolation Resistance | - Input to Output, 500 VDC: 100 MΩ min. |
| Isolation Capacitance | - Input to Output, 100 kHz, 1 V: 1'500 pF typ. |
| Leakage Current | - Earth Leakage Current: 500 pA max. |
|                | - Touch Current: 100 pA max. |
| Reliability | - Calculated MTBF: (see application note) |

All specifications valid at nominal voltage, resistive full load and +25°C after warm-up time, unless otherwise stated.
### Environment
- **Vibration**  
  IEC 60068-2-6  
  3 axis, sine sweep, 10-55 Hz, 0.075 mm
- **Mechanical Shock**  
  IEC 60068-2-27  
  15 g, 3 axis, half sine, 11 ms

### Housing Type
- Open Frame

### Mounting Type
- Chassis Mount

### Connection Type
- Pin Connector

### Weight
- 360 g

### Power Back Immunity
- 12 VDC model: 16 V max. (18 V for 1 s)
- 15 VDC model: 20 V max. (23 V for 1 s)
- 24 VDC model: 35 V max. (40 V for 1 s)
- 48 VDC model: 63 V max. (68 V for 1 s)

### Environmental Compliance
- **REACH Declaration**  
  www.tracopower.com/info/reach-declaration.pdf
  - REACH SVHC list compliant
  - REACH Annex XVII compliant
- **RoHS Declaration**  
  www.tracopower.com/info/rohs-declaration.pdf
  - Exemptions: 7a, 7c-I
  (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule))
- **SCIP Reference Number**  
  127e15dd-c33c-4469-8c0f-3977268632f2

### Supporting Documents
- **Overview Link** (for additional Documents)  
  www.tracopower.com/overview/top200

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

Dimensions in Inch (mm)
Tolerances: ±0.008 (±0.2)

4 x metal pillars (not included) for connection to conductive plate in order to meet all EMC specifications
Minimum height: 0.2 (5.0), max. diameter: 0.25 (6.0)

Input

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC (L)</td>
</tr>
<tr>
<td>2</td>
<td>AC (N)</td>
</tr>
</tbody>
</table>

Output

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>+ Vout</td>
</tr>
<tr>
<td>4-6</td>
<td>– Vout</td>
</tr>
</tbody>
</table>

On / Off

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>–</td>
</tr>
<tr>
<td>2</td>
<td>+</td>
</tr>
</tbody>
</table>