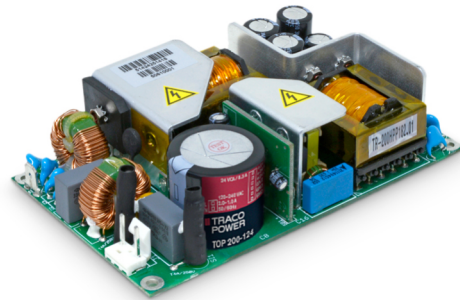


- Highest power density in 5.0" x 3.0" footprint
- Supplies 200 W (convection cooling!)
- Highest efficiency up to 95%
- Operating temperature range -25°C to +70°C
- Universal input 85 – 264 VAC
- Compliance with EN 61000-3-2
- Power Back immunity
- Low leakage current
- Protection class I and class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

| Order Code  | Output Power max. | Output Voltage nom. | Output Current max. | Efficiency typ. |
|-------------|-------------------|---------------------|---------------------|-----------------|
| TOP 200-112 | 200 W             | 12 VDC              | 16'000 mA           | 93 %            |
| TOP 200-115 |                   | 15 VDC              | 13'000 mA           | 93 %            |
| TOP 200-124 |                   | 24 VDC              | 8'300 mA            | 95 %            |
| TOP 200-148 |                   | 48 VDC              | 4'200 mA            | 95 %            |

### Options

|  |   |
|--|---|
| <b>on demand</b><br>(backorder with MOQ non stocking item) | - Encased version: <a href="http://www.tracopower.com/overview/top200c">www.tracopower.com/overview/top200c</a> |
|--|---|

### Input Specifications

|                        |  |   |
|------------------------|--|---|
| Input Voltage          |  | Operational Range: 85 - 264 VAC (Full Range)<br>Rated Range: 100 - 240 VAC (Full Range)                 |
| Input Frequency        |  | Operational Range: 47 - 63 Hz<br>Certified: 50/60 Hz  |
| Power Consumption      | - No load & Vin = 230 VAC<br>- No load & Vin = 115 VAC | 4'000 mW max.<br>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)<br><br>(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)<br>- Load Variation (0 - 100%) | 1% max.<br>1% max.  |
| Ripple and Noise<br>(20 MHz Bandwidth) |  | 12 VDC model: 120 mVp-p max.<br>15 VDC model: 120 mVp-p max.<br>24 VDC model: 120 mVp-p max.<br>48 VDC model: 150 mVp-p max.                                    |
| Capacitive Load                        |  | 12 VDC model: 15'000 µF max.<br>15 VDC model: 15'000 µF max.<br>24 VDC model: 4'000 µF max.<br>48 VDC model: 1'000 µF max.                                      |
| Minimum Load                           |  | Not required  |
| Temperature Coefficient                |  | ±0.02 %/K max.  |
| Hold-up Time                           | - At 230 VAC<br>- At 115 VAC                                   | 10 ms min.<br>10 ms min.  |
| Start-up Time                          | - At 230 VAC<br>- At 115 VAC                                   | 2'000 ms max.<br>3'000 ms max.  |
| Short Circuit Protection               |  | Automatic recovery<br>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)<br>20 V typ. (12 Vout model)<br>25 V typ. (15 Vout model)<br>35 V typ. (24 Vout model)<br>60 V typ. (48 Vout model) |
| Transient Response                     | - Peak Variation<br>- Response Time                            | 600 mV max. (10% to 90% Load Step)<br>20'000 µs max. (10% to 90% Load Step)   |

### Safety Specifications

|                       |                             |  |
|-----------------------|-----------------------------|--|
| Standards             | - IT / Multimedia Equipment | EN 60950-1<br>EN 62368-1<br>IEC 60950-1<br>IEC 62368-1<br>UL 60950-1   |
|                       | - Certification Documents   | <a href="http://www.tracopower.com/overview/top200">www.tracopower.com/overview/top200</a>   |
| Protection Class      |                             | Class I & II (Prepared): Reinforced Insulation<br>See application note: <a href="http://www.tracopower.com/info/protection-class.pdf">www.tracopower.com/info/protection-class.pdf</a> |
| Pollution Degree      |                             | PD 2   |
| Over Voltage Category |                             | OVC II   |

All specifications valid at 230 VAC, resistive full load and +25°C after warm-up time, unless otherwise stated.

## EMC Specifications

|                                |  |   |
|--------------------------------|--|---|
| <b>EMI (Emissions)</b>         |  | EN 61000-6-3 (Generic Residential)<br>EN 55032 class A (internal filter)<br>EN 55032 class B (internal filter)<br>EN 55032 class A (internal filter)<br>EN 55032 class B (internal filter)<br>EN 61000-3-2, class A<br>(conductive plane to be connected to safety earth to meet all EMI specifications)  |
| - Conducted Emissions          |  |   |
| - Radiated Emissions           |  |   |
| - Harmonic Current Emissions   |  |   |
| <b>EMS (Immunity)</b>          |  | EN 61000-4-3, 20 V/m, perf. criteria A<br>EN 61000-4-4, $\pm 2$ kV, perf. criteria B<br>L to L: EN 61000-4-5, $\pm 1$ kV, perf. criteria B<br>L to PE: EN 61000-4-5, $\pm 2$ kV, perf. criteria B<br>EN 61000-4-6, 10 Vrms, perf. criteria A<br>Continuous: EN 61000-4-8, 100 A/m, perf. criteria A<br>230 VAC / 50 Hz: EN 61000-4-11<br>20%, 250 periods, perf. criteria A<br>30%, 25 periods, perf. criteria A<br>60%, 10 periods, perf. criteria B<br>>95%, 1 period, perf. criteria B<br>115 VAC / 60 Hz: EN 61000-4-11<br>20%, 250 periods, perf. criteria A<br>30%, 25 periods, perf. criteria B<br>60%, 10 periods, perf. criteria B<br>>95%, 1 period, perf. criteria B |
| - RF Electromagnetic Field     |  |   |
| - EFT (Burst) / Surge          |  |   |
| - Conducted RF Disturbances    |  |   |
| - PF Magnetic Field            |  |   |
| - Voltage Dips & Interruptions |  |   |
| <b>EMC / Environmental</b>     |  | <a href="http://www.tracopower.com/overview/top200">www.tracopower.com/overview/top200</a>  |
| - Certification Documents      |  |   |

## General Specifications

|                                  |  |  |
|----------------------------------|--|--|
| <b>Relative Humidity</b>         |  | 95% max. (non condensing)  |
| <b>Temperature Ranges</b>        |  | -25°C to +70°C   |
| - Operating Temperature          |  |  |
| - Storage Temperature            |  | -40°C to +80°C   |
| <b>Power Derating</b>            |  | 2 %/K above 40°C (12 & 15 Vout models)<br>2 %/K above 50°C (24 & 48 Vout models)<br>1 %/V below 115 VAC (12 & 15 Vout models)<br>1.5 %/V below 108 VAC (24 & 48 Vout models)   |
| - High Temperature               |  |  |
| - Low Input Voltage              |  |  |
| <b>Cooling System</b>            |  | Natural convection (20 LFM)  |
| <b>Remote Control</b>            |  | See application note: <a href="http://www.tracopower.com/overview/top200">www.tracopower.com/overview/top200</a><br>See application note: <a href="http://www.tracopower.com/overview/top200">www.tracopower.com/overview/top200</a> |
| - Voltage Controlled Remote      |  |  |
| - Current Controlled Remote      |  |  |
| <b>Altitude During Operation</b> |  | 2'000 m max.   |
| <b>Regulator Topology</b>        |  | LLC Converter  |
| <b>Switching Frequency</b>       |  | 100 kHz typ. (PWM)   |
| <b>Insulation System</b>         |  | Reinforced Insulation  |
| <b>Isolation Test Voltage</b>    |  | 3'000 VAC<br>1'500 VAC<br>500 VAC  |
| - Input to Output, 60 s          |  |  |
| - Input to Case or PE, 60 s      |  |  |
| - Output to Case or PE, 60 s     |  |  |
| <b>Creepage</b>                  |  | 7 mm min.<br>4 mm min.<br>1 mm min.  |
| - Input to Output                |  |  |
| - Input to Case or PE            |  |  |
| - Output to Case or PE           |  |  |
| <b>Clearance</b>                 |  | 5 mm min.<br>2.5 mm min.<br>0.5 mm min.  |
| - Input to Output                |  |  |
| - Input to Case or PE            |  |  |
| - Output to Case or PE           |  |  |
| <b>Isolation Resistance</b>      |  | 100 M $\Omega$ min.  |
| <b>Isolation Capacitance</b>     |  | 1'500 pF typ.  |
| <b>Leakage Current</b>           |  | 500 $\mu$ A max.<br>100 $\mu$ A max.   |
| - Earth Leakage Current          |  |  |
| - Touch Current                  |  |  |

All specifications valid at 230 VAC, resistive full load and +25°C after warm-up time, unless otherwise stated.

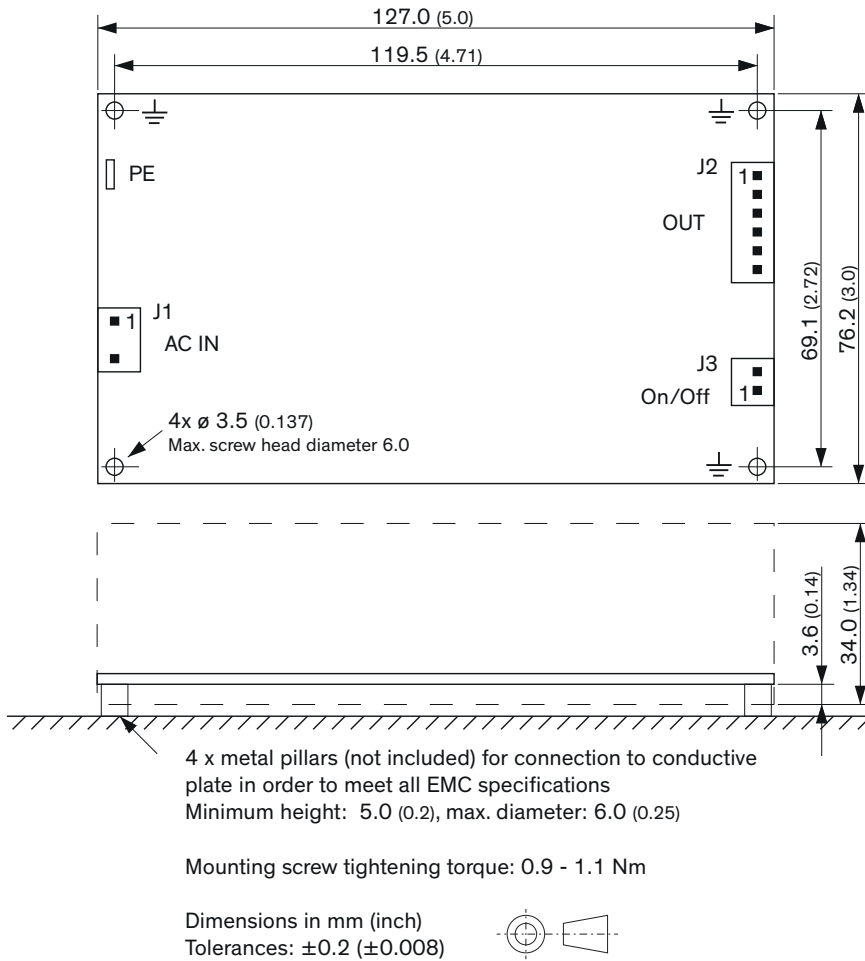
|                          |                         |  |
|--------------------------|-------------------------|--|
| Reliability              | - Calculated MTBF       | (see application note)   |
| Environment              | - Vibration             | IEC 60068-2-6<br>3 axis, sine sweep, 10-55 Hz, 0.075 mm  |
|                          | - Mechanical Shock      | IEC 60068-2-27<br>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     | <a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a><br>REACH SVHC list compliant<br>REACH Annex XVII compliant  |
|                          | - RoHS Declaration      | <a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a><br>Exemptions: 7(a), 7(c)-I<br>(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   |

### Additional Information

|                            |  |
|----------------------------|--|
| Supporting Documents       | <a href="http://www.tracopower.com/overview/top200">www.tracopower.com/overview/top200</a>     |
| Frequently Asked Questions | <a href="http://www.tracopower.com/glossary-faq">www.tracopower.com/glossary-faq</a>           |
| Glossary                   | <a href="http://www.tracopower.com/info/glossary.pdf">www.tracopower.com/info/glossary.pdf</a> |

All specifications valid at 230 VAC, resistive full load and +25°C after warm-up time, unless otherwise stated.

### Outline Dimensions



| Input |          |
|-------|----------|
| J1    |          |
| Pin   | Function |
| 1     | AC (L)   |
| 2     | AC (N)   |

| Output |          |
|--------|----------|
| J2     |          |
| Pin    | Function |
| 1-3    | + Vout   |
| 4-6    | - Vout   |

| On / Off |          |
|----------|----------|
| J3       |          |
| Pin      | Function |
| 1        | -        |
| 2        | +        |

#### Input Connector

PCB terminal: Molex 41791-26-62-4030  
Terminal Housing: Molex 2139-09-50-3031  
Crimp Terminal: Molex 2478-08-52-0072  
Wire size: 22-18 AWG

#### Output Connector

PCB terminal: Molex 2139-26-60-4060  
Terminal Housing: Molex 2139-09-50-3061  
Crimp Terminal: Molex 2478-08-52-0072  
Wire size: 20-18 AWG

#### On/Off Connector

PCB terminal: Molex KK 22-27-2021  
Terminal Housing: Molex KK 22-01-2025  
Crimp Terminal: Molex KK 08-50-0032  
Wire size: 30-22 AWG