Features

- Small and compact PCB construction
- Optional with chassis and cover
- Universal input 85–264 VAC,
- Output voltage adjustable
- Compliance to EN 61000-3-2 (PFC)
- EMI meets EN55022, Class B and FCC, Level B
- Short circuit and overvoltage protection
- International safety standards
- Industrial quality standard
- 3-year product warranty

The TOL Series switching power supplies are the best choice for many space critical applications. They feature ultra-compact dimensions and a low profile. As an accessory a chassis and cover kit for self-installation is available for all models. To make installation even more simple, prewired mating output/input connectors with flying leads are also offered as an accessory. Compliance with international safety standards (CE/UL) and EMC specifications qualify this product for worldwide use. A very high reliability is guaranteed by the use of industrial quality grade components and excellent thermal management.

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>TOL 10-05</td>
<td>TOL 10-12</td>
<td>10 Watt</td>
<td>5 VDC</td>
<td>2 A</td>
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<tr>
<td>TOL 10-24</td>
<td></td>
<td>12 VDC</td>
<td>0.9 A</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>24 VDC</td>
<td>0.5 A</td>
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<tr>
<td>TOL 15-05</td>
<td>TOL 15-12</td>
<td>15 Watt</td>
<td>5 VDC</td>
<td>3 A</td>
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<tr>
<td>TOL 15-24</td>
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<td>12 VDC</td>
<td>1.3 A</td>
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<td></td>
<td></td>
<td>24 VDC</td>
<td>0.7 A</td>
<td></td>
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<tr>
<td>TOL 30-05</td>
<td>TOL 30-12</td>
<td>30 Watt</td>
<td>5 VDC</td>
<td>6 A</td>
</tr>
<tr>
<td>TOL 30-24</td>
<td></td>
<td>12 VDC</td>
<td>2.5 A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>24 VDC</td>
<td>1.3 A</td>
<td></td>
</tr>
<tr>
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<td>TOL 50-12</td>
<td>50 Watt</td>
<td>5 VDC</td>
<td>10 A</td>
</tr>
<tr>
<td>TOL 50-24F</td>
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<td>12 VDC</td>
<td>4.3 A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>24 VDC</td>
<td>2.2 A (peak 3.0 A)*</td>
<td></td>
</tr>
<tr>
<td>TOL 75-05</td>
<td>TOL 75-12</td>
<td>75 Watt</td>
<td>5 VDC</td>
<td>15 A</td>
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<tr>
<td>TOL 75-24F</td>
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<td>12 VDC</td>
<td>6.3 A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>24 VDC</td>
<td>3.2 A (peak 4.5 A)*</td>
<td></td>
</tr>
<tr>
<td>TOL 100-05</td>
<td>TOL 100-12</td>
<td>100 Watt</td>
<td>5 VDC</td>
<td>20 A</td>
</tr>
<tr>
<td>TOL 100-24F</td>
<td></td>
<td>12 VDC</td>
<td>8.5 A</td>
<td></td>
</tr>
<tr>
<td>TOL 100-48</td>
<td></td>
<td>24 VDC</td>
<td>4.5 A (peak 6.3 A)*</td>
<td></td>
</tr>
<tr>
<td>TOL 150-05</td>
<td>TOL 150-12</td>
<td>150 Watt</td>
<td>5 VDC</td>
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</tr>
<tr>
<td>TOL 150-24F</td>
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<td>12 VDC</td>
<td>13 A</td>
<td></td>
</tr>
<tr>
<td>TOL 150-48</td>
<td></td>
<td>24 VDC</td>
<td>6.5 A (peak 9.1 A)*</td>
<td></td>
</tr>
<tr>
<td>TOL 300-12</td>
<td>TOL 300-24</td>
<td>300 Watt</td>
<td>12 VDC</td>
<td>27 A</td>
</tr>
<tr>
<td>TOL 300-48</td>
<td></td>
<td>24 VDC</td>
<td>14 A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>48 VDC</td>
<td>6.3 A</td>
<td></td>
</tr>
</tbody>
</table>

http://www.tracopower.com
## Open Frame Power Supplies
### TOL Series
#### 10–300 Watt

### Input Specifications
- **Input voltage range**: 85 – 264 VAC
- **Input frequency**: 47 – 63 Hz
- **Recommended circuit breaker**
  - 10 – 150 Watt models: 6 A
  - 300 Watt models: 10 A

### Output Specifications
- **Output voltage adjustment range**: ±10 %
- **Regulation**
  - Input variation: 0.5 % max.
  - Load variation (10–100%): 0.8 % max.
- **Ripple and noise** (20 MHz Bandwidth)
  - 5 VDC output models: 100 mV pp max.
  - 12/24 VDC output models: 180 mV pp max.
  - 48 VDC output models: 300 mV pp max. [TOL 300: 600 mV pp max]
- **Output current limitation** (except for F versions)
  - 105 % – 140 % of Inom.
- **Short circuit protection**
  - 10 to 30 Watt models: hiccup mode, indefinite (automatic recovery)
  - 50 to 300 Watt models: constant current (automatic recovery)
- **Overvoltage protection**
  - 115 – 135 % Vout nom.
- **Capacitive load**
  - TOL 10: 10’000 µF max. (24 Vout model: 2’000 µF)
  - TOL 15: 15’000 µF max. (24 Vout model: 6’000 µF)
  - other models: 18’000 µF max.

### General Specifications
- **Temperature ranges**
  - Operating temperature: −10°C to +60°C (TOL 150: −10°C to +50°C)
  - Derating above +50°C: 3 %/K (TOL 150: 1.5 %/°C above 35°C)
  - Storage (non operating): −20°C to +70°C
- **Temperature coefficient**: 0.02 %/K
- **Efficiency**: 75 % typ.
- **Humidity** (non condensing): 20 % – 90 % rel. H
- **Switching frequency**: 100 kHz typ. (PWM)
- **Hold-up time**: 20 ms typ. at full load
- **Isolation voltage**
  - Input / output: 3’000 VAC for 1min.
  - Input / FG (or case): 2’000 VAC for 1min.
  - Output / FG (or case): 500 VDC for 1min.
- **Isolation resistance**: 100 MOhm
- **Leakage current**: 0.6 mA RMS typ. / 230 VAC / 60 Hz
- **Electromagnetic compatibility**
  - Conducted input RI suppression
    - EN 55022, class B; FCC Part 15, level B
    - IEC/EN 61000-3-2, class D
  - Harmonic current emissions
  - Surge immunity
  - IEC/EN 61000-4-5: 2kV / 4kV
  - Electrostatic discharge
  - IEC/EN 61000-4-2: 8kV / 15kV
  - RoHS directive 2002/95/EC
- **Environmental compliance**

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

<table>
<thead>
<tr>
<th>Safety standards</th>
<th>EN 60950-1, UL/cUL 1950 File e188913</th>
</tr>
</thead>
</table>
| Reliability, calculated MTBF (MIL-HDBK-217F, ground benign) | – TOL 10 / TOL 15: > 650,000 h at +25°C  
– TOL 30: > 500,000 h at +25°C  
– TOL 50 / TOL 75: > 375,000 h at +25°C  
– TOL 100 / TOL 150: > 350,000 h at +25°C  
– TOL 300: > 260,000 h at +25°C |

Remote ON/OFF (available as option for models TOL 30/50/75/100/150/300)

- On: 5 VDC (input resistance 1 KOhm)
- Off: 0 VDC or open circuit

Remote sensing (only TOL 300 models)

- without sens line: previred connector included
- with sens line: use Molex housing/pin 67261-0400 / 67262 to connect sens line at P54

Vibration

IEC 60068-2-6,

5-10 Hz with 10mm amplitude
2 gn, 60 sweeps of 10-55 Hz, each axis

Shock resistance

IEC 60068-2-27, 20 gn each axis

Mating Connectors with prewired flying Leads (500mm Length)

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Description</th>
<th>Pin no.</th>
<th>Wire Color</th>
<th>Cross-Section</th>
<th>AWG</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOL-C31</td>
<td>Input cable for all models</td>
<td>1</td>
<td>black</td>
<td>0.75mm²</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>(excl. TOL 300)</td>
<td>3</td>
<td>white</td>
<td>0.75mm²</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>green</td>
<td>0.75mm²</td>
<td>18</td>
</tr>
<tr>
<td>TOL-C41</td>
<td>TOL 10/15 output cable</td>
<td>1–2</td>
<td>black</td>
<td>0.4mm²</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3–4</td>
<td>red</td>
<td>0.4mm²</td>
<td>22</td>
</tr>
<tr>
<td>TOL-C42</td>
<td>TOL 30/50 output cable</td>
<td>1–2</td>
<td>black</td>
<td>0.75 mm²</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3–4</td>
<td>red</td>
<td>0.75 mm²</td>
<td>18</td>
</tr>
<tr>
<td>TOL-C61</td>
<td>TOL 75 output cable</td>
<td>1–3</td>
<td>black</td>
<td>0.4mm²</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4–6</td>
<td>red</td>
<td>0.4mm²</td>
<td>22</td>
</tr>
<tr>
<td>TOL-C62</td>
<td>TOL 150 output cable +</td>
<td>1–6</td>
<td>red</td>
<td>0.4mm²</td>
<td>22</td>
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<tr>
<td>TOL-C71</td>
<td>TOL 150 output cable –</td>
<td>1–7</td>
<td>black</td>
<td>0.4mm²</td>
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<tr>
<td>TOL-C81</td>
<td>TOL 100 output cable</td>
<td>1–4</td>
<td>black</td>
<td>0.4mm²</td>
<td>22</td>
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<td></td>
<td></td>
<td>5–8</td>
<td>red</td>
<td>0.4mm²</td>
<td>22</td>
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</tbody>
</table>

Chassis / Cover Kit

<table>
<thead>
<tr>
<th>Order Code</th>
<th>For Models</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOL 10-MC</td>
<td>TOL 10-xx</td>
</tr>
<tr>
<td>TOL 15-MC</td>
<td>TOL 15-xx</td>
</tr>
<tr>
<td>TOL 30-MC</td>
<td>TOL 30-xx</td>
</tr>
<tr>
<td>TOL 50-MC</td>
<td>TOL 50-xx</td>
</tr>
<tr>
<td>TOL 75-MC</td>
<td>TOL 75-xx</td>
</tr>
<tr>
<td>TOL 100-MC</td>
<td>TOL 100-xx</td>
</tr>
<tr>
<td>TOL 150-MC</td>
<td>TOL 150-xx</td>
</tr>
<tr>
<td>TOL 300-MC</td>
<td>TOL 300-xx</td>
</tr>
</tbody>
</table>

Mating Connectors (model information)

<table>
<thead>
<tr>
<th>For Connection</th>
<th>JST (housing / pin)</th>
<th>MOLEX (housing / pin)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1 – all models</td>
<td>VHR-5N / SVH-21T-P1.1</td>
<td>51144-0500 / 50539</td>
</tr>
<tr>
<td>P51 – TOL 10/15</td>
<td>XHP-4 / SXH-001T-P0.6</td>
<td>67261-0400 / 67262</td>
</tr>
<tr>
<td>P51 – TOL 30/50</td>
<td>VHR-4N / SVH-21T-P1.1</td>
<td>51144-0400 / 50539</td>
</tr>
<tr>
<td>P51 – TOL 75/150</td>
<td>VHR-6N / SVH-21T-P1.1</td>
<td>51144-0600 / 50539</td>
</tr>
<tr>
<td>P51 – TOL 100</td>
<td>VHR-8N / SVH-21T-P1.1</td>
<td>51144-0800 / 50539</td>
</tr>
<tr>
<td>P52 – TOL 150</td>
<td>VHR-7N / SVH-21T-P1.1</td>
<td>51144-0700 / 50539</td>
</tr>
<tr>
<td>P52/53 remote on/off</td>
<td>XHP-2 / SXH-001T-P0.6</td>
<td>67261-0200 / 67262</td>
</tr>
<tr>
<td>P54 – TOL 300 sens</td>
<td>XHP-4 / SXH-001T-P0.6</td>
<td>67261-0400 / 67262</td>
</tr>
</tbody>
</table>

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

http://www.tracopower.com
One Power Supply - 3 Mounting Variations

TOL Standard open Frame Version

TOL Standard open Frame Version

TOL Standard open Frame Version

TOL Standard open Frame Version
Outline Dimensions mm (inches)

TOL 10 standard open frame version

TOL 10 with chassis / cover option

Weight 75 g (2.6 oz)

Weight 170 g (17.6 oz)

Specifications can be changed any time without notice.

http://www.tracopower.com
Open Frame Power Supplies
TOL Series
10–300 Watt

Outline Dimensions mm (inches)

TOL 15 standard open frame version

Weight 95 g (3.4 oz)

TOL 15 with chassis / cover option

Weight 210 g (7.4 oz)

Specifications can be changed any time without notice.
Outline Dimensions mm (inches)

TOL 30 standard open frame version

on/off control connection (optional)

Voltage adjustment

Specifications can be changed any time without notice.

Weight 200 g (7.1 oz)

TOL 30 with chassis / cover option

Weight 280 g (9.9 oz)
Outline Dimensions mm (inches)

TOL 50 standard open frame version

- Voltage adjustment
- on/off control connection (optional)
- 4 x ø 3.5 (FG)
- +Vout
- -Vout

Dimensions:
- 55 (2.17)
- 45 ± 0.5 (1.77 ± 0.02) (0.2)
- 185 ± 0.5 (7.28 ± 0.02) (0.2)
- 195 (7.68)

Weight: 210 g (7.4 oz)

TOL 50 with chassis / cover option

- 2 x ø3.5
- 2 x M3 thread
- 4 x M3 thread

Dimensions:
- 65 (2.56)
- 20 ± 0.5 (0.79 ± 0.02) (0.14)
- 13 ± 0.5 (0.51)
- 33 ± 0.5 (1.30 ± 0.02) (0.79 ± 0.02)
- 210 ± 0.5 (8.27 ± 0.02) (0.91)
- 225 (8.86)

Weight: 410 g (14.5 oz)

Specifications can be changed any time without notice.
Open Frame Power Supplies
TOL Series
10–300 Watt

Outline Dimensions mm (inches)

TOL 75 standard open frame version

TOL 75 with chassis / cover option

Weight 290 g (10.2 oz)

Weight 520 g (18.3 oz)

Specifications can be changed any time without notice.
Open Frame Power Supplies
TOL Series
10–300 Watt

Outline Dimensions mm (inches)

TOL 100 standard open frame version

TOL 100 with chassis / cover option

Specifications can be changed any time without notice.
Open Frame Power Supplies
TOL Series
10–300 Watt

Outline Dimensions mm (inches)

TOL 150 standard open frame version

TOL 150 with chassis / cover option

Weight 500 g (17.5 oz)

Weight 830 g (29.5 oz)

Specifications can be changed without notice
Open Frame Power Supplies
TOL Series 10–300 Watt

Outline Dimensions mm (inches)

TOL 300 standard open frame version

TOL 300 with chassis / cover option

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