Industrial Power Supplies
TSP-3P Series, 240–960 Watt

Features 200% Peak Power!
◆ 3-phase input 3AC 400V or 3AC 500V
◆ 200% boost power for up to 5 seconds
◆ Alternative to AC transformers
◆ Fully regulated 24 VDC output with 10 A, 20 A or 40 A
◆ Rugged metal case design qualified for harsh industrial environment
◆ High efficiency >92%
◆ Operating temperature range: –25°C to +60°C (full power)
◆ Overload and over temperature protection
◆ Industrial safety approvals
◆ Cost effective design
◆ 3-year product warranty

The TRACOPOWER TSP-3P series of high performance DIN-rail power supplies offers an economical solution to generate a regulated DC voltage from three-phase mains networks. The smart design achieves a very high efficiency at ultra compact size and very competitive cost. The series provides models with 240, 480 and 960 Watt output power all with additional power reserve of up to 200%. This high peak power guarantees a reliable start-up of loads with high inrush currents such as motors, valves and other industrial loads. In many applications these switching power supplies can also replace mains transformers with rectifiers.

Models

<table>
<thead>
<tr>
<th>Order Code</th>
<th>Output Power (nom.)</th>
<th>Input Voltage (nom.)</th>
<th>Output Voltage (nom.)</th>
<th>*Output Current (nom.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSP 240-124-3PAC400</td>
<td>240 W</td>
<td>3 AC 400 V</td>
<td>24 VDC</td>
<td>10 A</td>
</tr>
<tr>
<td>TSP 240-124-3PAC500</td>
<td></td>
<td>3 AC 500 V</td>
<td>24 VDC</td>
<td>10 A</td>
</tr>
<tr>
<td>TSP 480-124-3PAC400</td>
<td>480 W</td>
<td>3 AC 400 V</td>
<td>24 VDC</td>
<td>20 A</td>
</tr>
<tr>
<td>TSP 480-124-3PAC500</td>
<td></td>
<td>3 AC 500 V</td>
<td>24 VDC</td>
<td>20 A</td>
</tr>
<tr>
<td>TSP 960-124-3PAC400</td>
<td>960 W</td>
<td>3 AC 400 V</td>
<td>24 VDC</td>
<td>40 A</td>
</tr>
<tr>
<td>TSP 960-124-3PAC500</td>
<td></td>
<td>3 AC 500 V</td>
<td>24 VDC</td>
<td>40 A</td>
</tr>
</tbody>
</table>

* 200% peak current for up to 5 sec.
### Input Specifications

**Input voltage range**  
400 VAC models: 320 – 440 VAC  
500 VAC models: 400 – 550 VAC (derating below 410 VAC see graph 2)

**Input voltage frequency**  
47 – 63 Hz

**Harmonic limits**  
EN 61000-3-2, Class B (for <16 A per phase)

**Power factor**  
>0.8 at full load

**Star-net configuration**  
(2-phase operation not possible)

**Input voltage range**  
400 VAC models: 320 – 440 VAC  
500 VAC models: 400 – 550 VAC

**Input voltage frequency**  
47 – 63 Hz

**Harmonic limits**  
EN 61000-3-2, Class B (for <16 A per phase)

**Power factor**  
>0.8 at full load

**Recommended circuit breaker,**  
6.0 A characteristic B

### Output Specifications

**Output voltage:**  
24 VDC (fixed)

**Regulation**  
1 % max. + voltage drop at low input voltage and/or boost power, see graph 1 & 2

**Boost power**  
- max. current  
- duty cycle  
- max. cycle time  
- input voltage requirements

**Ripple and noise**  
100 mV pk-pk typ.  
up to 750 mV pk-pk

**Rise time**  
200 ms typ.

**Current limitation**  
at 230 % of nominal output current, constant current

**Overvoltage protection**  
33 V typ.

**Overtemperature protection**  
switch off at overtemperature (automatic restart)

**Power back immunity**  
35 VDC continuous, 40 VDC for one second

### Output Power Derating

Graph 1: 400 VAC input models

Graph 2: 500 VAC input models

### General Specifications

**Temperature range**  
- Full power operation: -25°C to +60°C  
- Max. operating: +70°C, 2.5 %/K derating above +60°C  
- Start up: -40°C  
- In accordance to UL508

**Cooling**  
convection cooling, no internal fan

**Humidity**  
(non condensing)  
95 % rel. H max.

**Reliability, calculated MTBF at +25°C acc. to IEC 61709**  
- TSP 240 & 480: >1 Mio h  
- TSP 960: >800'000 h

**Isolation**  
according to IEC/EN 60950-1, UL 60950-1, UL 508

**Class of protection**  
safety class I (IEC 536)

**Degree of protection**  
IP 20 (IEC/EN 60529)
## General Specifications

### Electromagnetic compatibility (EMC), Emissions
- Conducted RI suppression on input
- Radiated RI suppression

**Electromagnetic compatibility (EMC), Immunity**
- Electrostatic discharge (ESD)
  - Input: IEC/EN 61000-4-2 8 kV / 15 kV criteria tba
  - Output: IEC/EN 61000-4-2 15 kV criteria tba
- Radiated RF field immunity
- Electrical fast transient (burst immunity input / output)
  - Input: IEC/EN 61000-4-4 4 kV criteria tba
  - Output: IEC/EN 61000-4-4 2 kV criteria tba
- Surge immunity
  - Input: IEC/EN 61000-4-5 2 kV criteria tba
  - Output: IEC/EN 61000-4-5 2 kV criteria tba
- Mains voltage dips and interruptions
  - Input: IEC/EN 61000-4-6 10 V criteria tba

### Safety standards
- Information technology equipment: IEC/EN 60950-1, UL 60950-1
- Industrial control equipment: UL 508 listed, CSA C22.2 No. 107.1
- Equipment for use in explosive atmospheres: ATEX 94/9/EC
- Electrical equipment for machines: EN 60204
- Electronic equipment for power installations: EN 50178
- Safety of power transformers: EN 61558-2-16

### Safety approvals and certification documents
- CB report for IEC 60950-1
- SIQ certificate for EN 60950-1
- II3G Ex nA nC llC T3
- UL approvals for UL 508 listed
- Curtis-Straus certificate for UL 60950-1 (2nd)
- Bureau Veritas for other standards
- www.tracopower.com/overview/tsp-3p

### Environmental compliance
- Reach
- RoHS directive 2002/95/EC
- www.tracopower.com/info/reach-declaration.pdf

### Environment
- Vibration acc. IEC 60068-2-6: 0.075 mm / 10 – 55 Hz
- Shock acc. IEC 60068-227: 11ms / 15 g

### Status signals
- DC-OK relay contact: DC OK = contact closed at >20...22 VDC rated: 30 VDC/1.0 A for 24 VDC models
- DC-OK indication: green LED at >20...22 VDC
- Phase error indication: red LED if one or two phases are missing (function only if earth is connected)
- Overload / Overtemperature: red LED on at >100% nominal load (5 sec. count down for boost power is activated)
- Automatic restart indication: red blinking LED at temperature shut down (manual restart required - mains disconnect for 5 sec.)

### Enclosure material
- Aluminium (chassis) / Stainless steel (cover)

### Mounting
- DIN-rail mounting: for DIN-rails as per EN 50022-35x15/7.5 (snap-on with self-locking spring)
- Wall mounting (option): with wall mounting bracket - see page 6

### Connection
- Screw terminals

### Installation instructions
- www.tracopower.com/overview/tsp-3p

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

240 Watt models

Weight: 575 g (1.27 lb)

Dimensions in [mm], ( ) = Inch
Tolerances: ±0.5 mm (±0.02)

480 Watt models

Weight: 1.05 kg (2.31 lb)

Dimensions in [mm], ( ) = Inch
Tolerances: ±0.5 mm (±0.02)
Outline Dimensions

960 Watt models

Weight: 2.35 kg (5.19 lb)

Dimensions in [mm], ( ) = Inch
Tolerances: ±0.5 mm (±0.02)
## TSP–WMK Wall Mounting Bracket

<table>
<thead>
<tr>
<th>Order code</th>
<th>For models</th>
<th>Content of kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSP-WMK03</td>
<td>240 W</td>
<td>1 bracket</td>
</tr>
<tr>
<td>TSP-WMK02</td>
<td>480 W &amp; 960 W</td>
<td>2 brackets</td>
</tr>
</tbody>
</table>

**TSP-WMK03**

**TSP-WMK02**

### Specifications

- **Dimensions:** 
  - [mm] ( ) = Inch
  - Material: 2 mm Mild Steel
  - Tolerance: ±0.1mm (±0.004)

### Examples

- **Dimensions:** 
  - 62.5 (2.46)
  - 55.0 (2.16)
  - 30.0 (1.18)
  - 85.0 (3.35)