

### 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

Order Code	Output Power (nom.)	Input Voltage (nom.)	Output Voltage (nom.)	*Output Current (nom.)
TSP 240-124-3PAC400	240 W	3 AC 400 V	24 VDC	10 A
TSP 240-124-3PAC500		3 AC 500 V	24 VDC	10 A
TSP 480-124-3PAC400	480 W	3 AC 400 V	24 VDC	20 A
TSP 480-124-3PAC500		3 AC 500 V	24 VDC	20 A
TSP 960-124-3PAC400	960 W	3 AC 400 V	24 VDC	40 A
TSP 960-124-3PAC500		3 AC 500 V	24 VDC	40 A

\* 200% peak current for up to 5 sec.

**Input Specifications**

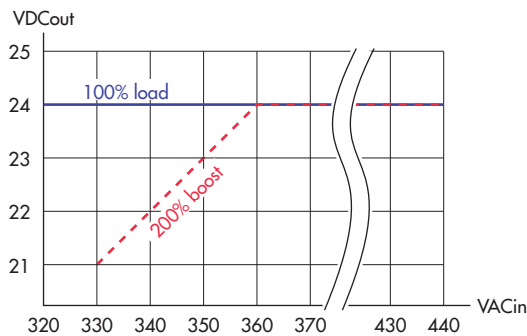
Input voltage range	400 VAC models: 320 – 440 VAC 500 VAC models: 400 – 550 VAC (derating below 410 VAC see graph 2)	star-net configuration (2-phase operation not possible)
Input voltage frequency	47 – 63 Hz	
Harmonic limits	EN 61000-3-2, Class B (for <16 A per phase)	
Power factor	>0.8 at full load	
Recommended circuit breaker,	6.0 A characteristic B	

**Output Specifications**

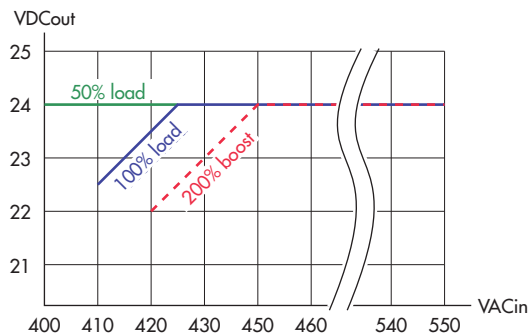
Output voltage:	24 VDC (fixed)	
Regulation	– Input / load variation	1 % max. + voltage drop at low input voltage and/or boost power, see graph 1 & 2
Boost power	– max. current – duty cycle – max. cycle time – input voltage requirements	200 % of nominal output current <10 % 5 sec limited by timer (automatic restart after 30 sec.) see graph 1 & 2
Ripple and noise (20MHz bandwidth)	– nominal operation – boost power operation	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 – Max. operating – Start up – In accordance to UL508	–25°C to +60°C +70°C, 2.5 %/K derating above +60°C –40°C –25°C to +40°C
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 – TSP 960	>1 Mio h >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)	

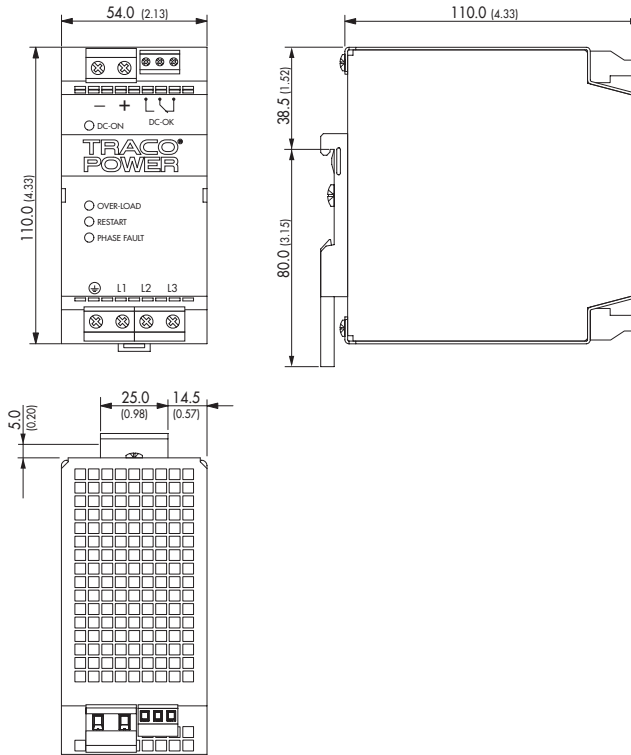
**General Specifications**

Electromagnetic compatibility (EMC), Emissions	<ul style="list-style-type: none"> <li>– Conducted RI suppression on input</li> <li>– Radiated RI suppression</li> </ul>	EN 61000-6-3 EN 55011 class B, EN 55022 class B, EN 55011 class B, EN 55022 class B,
Electromagnetic compatibility (EMC), Immunity	<ul style="list-style-type: none"> <li>– Electrostatic discharge (ESD)</li> <li>– Radiated RF field immunity</li> <li>– Electrical fast transient burst immunity input burst immunity output</li> <li>– Surge immunity <ul style="list-style-type: none"> <li>L – L</li> <li>L – PE</li> <li>+ Output – - Output</li> <li>+ Output – PE</li> <li>– Output – PE</li> </ul> </li> <li>– Immunity to conducted RF disturbances</li> <li>– Mains voltage dips and interruptions</li> </ul>	EN 61000-6-2 IEC/EN 61000-4-2 8 kV / 15 kV IEC/EN 61000-4-3 10 V/m IEC/EN 61000-4-4 4 kV IEC/EN 61000-4-4 2 kV IEC/EN 61000-4-5 2 kV IEC/EN 61000-4-5 4 kV IEC/EN 61000-4-5 0.5 kV IEC/EN 61000-4-5 0.5 kV IEC/EN 61000-4-5 0.5 kV IEC/EN 61000-4-6 10 V IEC/EN 61000-4-11 criteria tba criteria tba criteria tba criteria tba criteria tba criteria tba criteria tba criteria tba criteria tba
Safety standards	<ul style="list-style-type: none"> <li>– Information technology equipment</li> <li>– Industrial control equipment</li> <li>– Equipment for use in explosive atmospheres</li> <li>– Electrical equipment for machines</li> <li>– Electronic equipment for power installations</li> <li>– Safety of power transformers</li> </ul>	IEC/EN 60950-1, UL 60950-1 UL 508 listed, CSA C22.2 No. 107.1 ATEX 94/9/EC EN 60204 EN 50178 EN 61558-2-16
Safety approvals and	<ul style="list-style-type: none"> <li>– CB report for IEC 60950-1</li> <li>– SIQ certificate for EN 60950-1</li> <li>–  II3G Ex nA nC IIC T3</li> <li>– UL approvals for UL 508 listed</li> <li>– Curtis-Straus certificate for UL 60950-1 (2nd)</li> <li>– Bureau Veritas for other standards</li> </ul>	<a href="http://www.tracopower.com/products/tsp3p-cb.pdf">www.tracopower.com/products/tsp3p-cb.pdf</a> <a href="http://www.tracopower.com/products/tsp3p-siq.pdf">www.tracopower.com/products/tsp3p-siq.pdf</a> <a href="http://www.tracopower.com/products/tsp3p-atex.pdf">www.tracopower.com/products/tsp3p-atex.pdf</a> <a href="http://www.tracopower.com/products/tsp3p-ul508.pdf">www.tracopower.com/products/tsp3p-ul508.pdf</a> <a href="http://www.tracopower.com/products/tsp3p-ul.pdf">www.tracopower.com/products/tsp3p-ul.pdf</a> <a href="http://www.tracopower.com/products/tsp3p-bv.pdf">www.tracopower.com/products/tsp3p-bv.pdf</a>
Environmental compliance	<ul style="list-style-type: none"> <li>– Reach</li> <li>– RoHS</li> </ul>	<a href="http://www.tracopower.com/products/tsp3p-reach.pdf">www.tracopower.com/products/tsp3p-reach.pdf</a> RoHS directive 2002/95/EC
Environment	<ul style="list-style-type: none"> <li>– Vibration acc. IEC 60068-2-6;</li> <li>– Shock acc. IEC 60068-2-27</li> </ul>	0.075 mm / 10 – 55 Hz, 11ms / 15 g
Status signals	<ul style="list-style-type: none"> <li>– DC-OK relay contact</li> <li>– DC-OK indication</li> <li>– Phase error indication</li> <li>– Overload / Overtemperature</li> <li>– Automatic restart indication</li> </ul>	DC OK = contact closed at >20...22 VDC rated: 30 VDC/1.0 A for 24 VDC models green LED at >20...22 VDC red blinking LED if one or two phases are missing (function only if earth is connected) red LED on at >100% nominal load (5 sec. count down for boost power is activated) red blinking LED at temperature shut down (manual restart required - mains disconnect for 5 sec.) red blinking LED during overload recovery periode
Enclosure material		aluminium (chassis) / stainless steel (cover)
Mounting	<ul style="list-style-type: none"> <li>– DIN-rail mounting</li> <li>– Wall mounting (option)</li> </ul>	for DIN-rails as per EN 50022-35x15/7.5 (snap-on with self-locking spring) with wall mounting bracket - see page 6
Connection		screw terminals
Installation instructions		<a href="http://www.tracopower.com/products/tsp3p-inst.pdf">www.tracopower.com/products/tsp3p-inst.pdf</a>

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

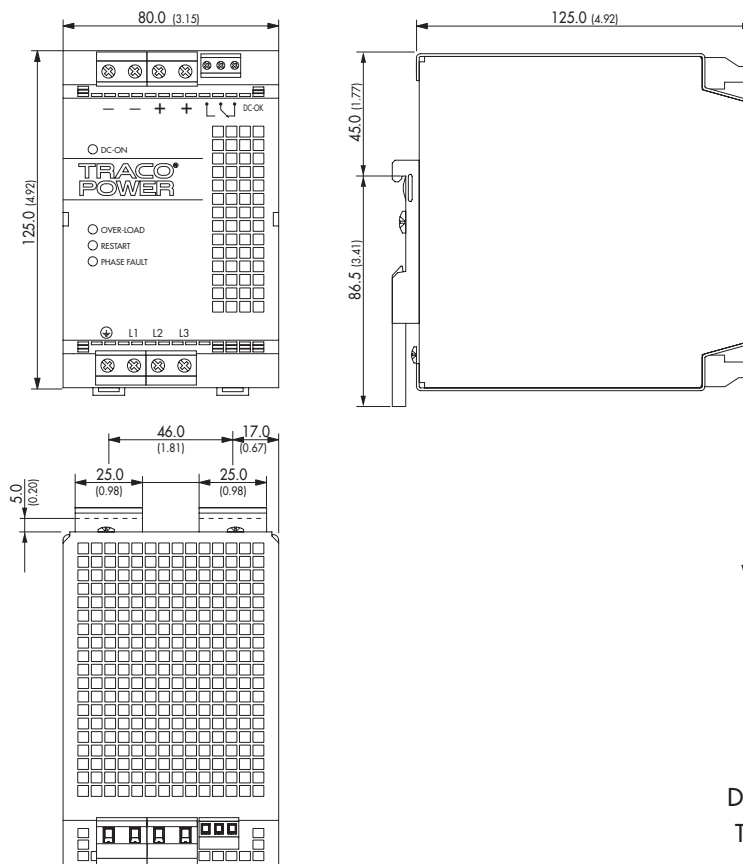
**Outline Dimensions**

**240 Watt models**



**Weight: 575 g (1.27 lb)**

**480 Watt models**

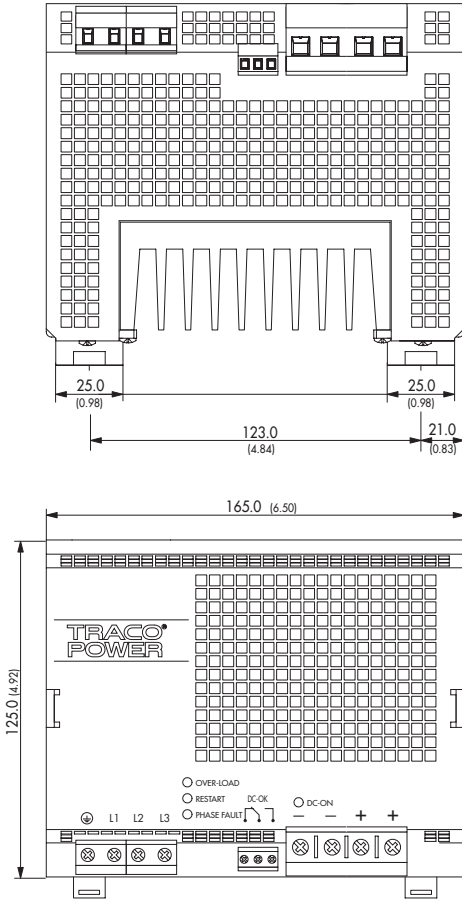


**Weight: 1.05 kg (2.31 lb)**

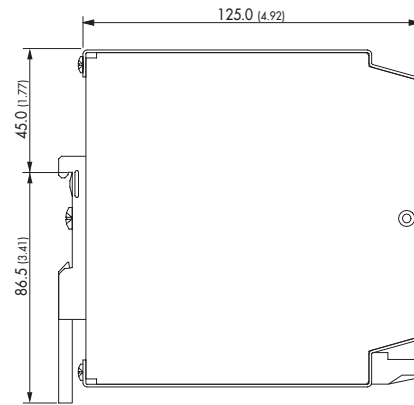
Dimensions in [mm], ( ) = Inch  
Tolerances: ±0.5 mm (±0.02)

**Outline Dimensions**

960 Watt models



**Weight:** 2.35 kg (5.19 lb)

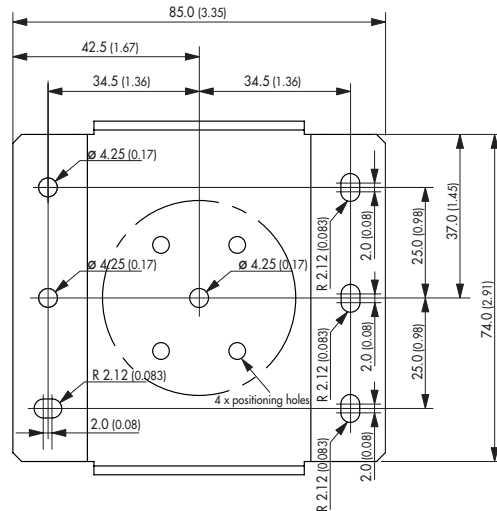


Dimensions in [mm], ( ) = Inch  
Tolerances: ±0.5 mm (±0.02)

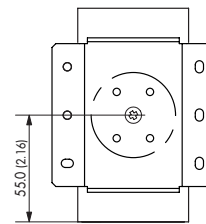
**TSP-WMK Wall Mounting Bracket**

Order code	For models	Content of kit
TSP-WMK03	240 W	1 bracket
TSP-WMK02	480 W & 960 W	2 brackets

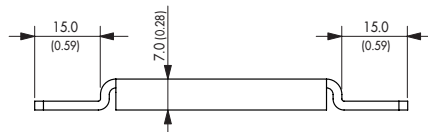
**TSP-WMK03**



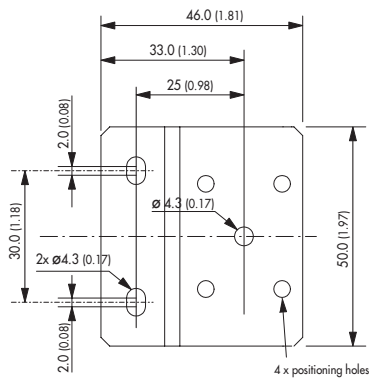
TSP 240-124-3PAC400  
TSP 240-124-3PAC500



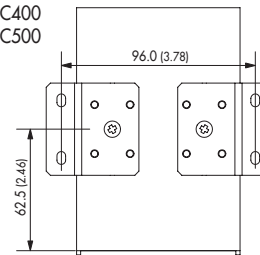
**TSP-WMK02**



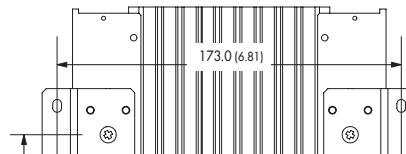
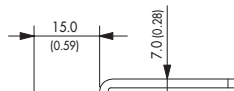
Material: 2 mm Mild Steel  
Tolerance: ±0.1mm (±0.004)



TSP 480-124-3PAC400  
TSP 480-124-3PAC500



TSP 960-124-3PAC400  
TSP 960-124-3PAC500



Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at [www.tracopower.com](http://www.tracopower.com)