

## AC/DC Power Supply

## TMPW 5-T Series, 5 Watt

- Compact chassis mount power module in 2.17" x 1.70" package
- Wide input voltage range 90-305 VAC
- Certified according to EN 60335-1 and IEC/EN/UL 62368-1
- I/O-Isolation 4'000 VAC
- Operating temperature range -40°C to +70°C
- No load input power <0.1W (acc. ErP directive)
- High efficiency up to 83%
- Internal EN 55032 class B filter
- Protection class II prepared
- 3-year product warranty



UL 62368-1 IEC 60335-1  
IEC 62368-1

The TMPW 5-T is a 5 Watt AC/DC series with an extended input range of 90-305 VAC and is suitable for industrial and household/building technology applications and comes in a compact encapsulated plastic case. The 305 VAC (277 VAC  $\pm 10\%$ ) threshold is derived from a 480 VAC three-phase supply voltage often used in heavy industrial applications. Through the increased voltage level, the drawn current from the load is effectively reduced, which allows for an overall more compact and lightweight design approach. They offer an I/O-isolation voltage of 4000 VAC, a high temperature range of -40 to +70°C and are prepared for protection class II applications. Additionally, an internal EN 55032 class B filter saves valuable board space for an otherwise often mandatory external filter setup. An energy efficient design (<0.1 Watt standby power consumption) and safety approvals according to IEC/EN/UL 62368-1 and EN 60335-1 make this series suitable for a wide range of industrial and household/building technology applications.

### Models

Order Code		Output Power	Output Voltage	Output Current	Efficiency
Screw terminals	JST connectors *	max.	nom.	max.	typ.
<b>TMPW 5-103-T</b>	<b>TMPW 5-103-J</b>		3.3 VDC	1'515 mA	73 %
<b>TMPW 5-105-T</b>	<b>TMPW 5-105-J</b>		5 VDC	1'000 mA	77 %
<b>TMPW 5-112-T</b>	<b>TMPW 5-112-J</b>	5 W	12 VDC	420 mA	81 %
<b>TMPW 5-124-T</b>	<b>TMPW 5-124-J</b>		24 VDC	210 mA	83 %

### Options

<b>TMPW-MK1</b>	- Optional DIN-Rail Mounting Kit: <a href="http://www.tracopower.com/overview/tmpw-mk1">www.tracopower.com/overview/tmpw-mk1</a>
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Note - \* Technically identical series with JST connectors available. See: [www.tracopower.com/overview/tmpw5-j](http://www.tracopower.com/overview/tmpw5-j)

## Input Specifications

Input Voltage	- AC Range	Operational Range: <b>90 - 305 VAC</b> (Full Range) Rated Range: <b>100 - 277 VAC</b> (Full Range)
	- DC Range	Operational Range: <b>100 - 430 VDC</b> Certified Range: <b>100 - 250 VDC</b> Polarity: <b>irrelevant</b> (The rated range refers to 62368-1. For 60335-1 certification the rated input voltage is 100 - 240 VAC and DC input is not permitted.)
Input Frequency		Operational Range: <b>47 - 440 Hz</b> Certified: <b>50/60 Hz</b>
Power Consumption	- No load & Vin = 230 VAC - No load & Vin = 115 VAC	<b>100 mW max.</b> (Ready to meet ErP directive) <b>100 mW max.</b>
Input Current	- Full load & Vin = 230 VAC - Full load & Vin = 115 VAC	<b>90 mA max.</b> <b>150 mA max.</b>
Input Inrush Current	- At 230 VAC - At 115 VAC	<b>60 A max.</b> <b>30 A max.</b>
Recommended Input Fuse		<b>1'600 mA</b> (slow blow) (The need of an external fuse has to be assessed in the final application.)

## Output Specifications

Voltage Set Accuracy	<b>±2% max.</b>	
Regulation	- Input Variation (Vmin - Vmax)	<b>0.2% max.</b> (3.3 & 5 Vout models) <b>0.1 % max.</b> (other models)
	- Load Variation (0 - 100%)	<b>1% max.</b> (3.3 Vout model) <b>0.5 % max.</b> (other models)
Ripple and Noise (20 MHz Bandwidth)	3.3 VDC model:	<b>60 mVp-p max.</b> (w/ 0.1 $\mu$ F    47 $\mu$ F)
	5 VDC model:	<b>60 mVp-p max.</b> (w/ 0.1 $\mu$ F    47 $\mu$ F)
	12 VDC model:	<b>120 mVp-p max.</b> (w/ 0.1 $\mu$ F    47 $\mu$ F)
	24 VDC model:	<b>200 mVp-p max.</b> (w/ 0.1 $\mu$ F    47 $\mu$ F)
Capacitive Load	3.3 VDC model:	<b>3'500 <math>\mu</math>F max.</b>
	5 VDC model:	<b>2'500 <math>\mu</math>F max.</b>
	12 VDC model:	<b>470 <math>\mu</math>F max.</b>
	24 VDC model:	<b>150 <math>\mu</math>F max.</b>
Minimum Load		<b>Not required</b>
Temperature Coefficient		<b>±0.02 %/K max.</b>
Hold-up Time	- At 230 VAC	<b>15 ms min.</b>
Start-up Time	- At 230 VAC - At 115 VAC	<b>60 ms max.</b> <b>60 ms max.</b>
Short Circuit Protection		<b>Continuous, Automatic recovery</b>
Output Current Limitation		<b>115 - 195% of Iout max.</b>
Overvoltage Protection		<b>105 - 145% of Vout nom.</b> (By Zener diode)
Transient Response	- Response Deviation - Response Time	<b>2% typ. / 3% max.</b> (50% to 75% Load Step) <b>500 <math>\mu</math>s max.</b> (50% to 75% Load Step)

## Safety Specifications

Standards	- IT / Multimedia Equipment	<b>EN 62368-1</b> <b>IEC 62368-1</b> <b>UL 62368-1</b>
	- Household	<b>EN 60335-1</b> <b>IEC 60335-1</b>
	- Power Transformers	<b>IEC 61558-1</b> <b>IEC 61558-2-16</b>
	- Certification Documents	<a href="http://www.tracopower.com/overview/tmpw5-t">www.tracopower.com/overview/tmpw5-t</a>

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

Protection Class	Class I & II (Prepared): Reinforced Insulation
	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

## EMC Specifications

EMI (Emissions)	- Conducted Emissions	EN 55032 class A (internal filter)		
	- Radiated Emissions	EN 55032 class B (internal filter)		
	- Harmonic Current Emissions	EN 55032 class A (internal filter)		
	- Voltage Fluctuations & Flicker	EN 55032 class B (internal filter)		
EMS (Immunity)	EN 61000-3-2, class A			
	EN 61000-3-3			
EMS (Immunity)	EN 61000-6-2 (Generic Industrial)			
	EN 55024 (IT Equipment)			
	EN 55035 (Multimedia)			
	Air:	EN 61000-4-2, $\pm 8$ kV, perf. criteria A		
	Contact:	EN 61000-4-2, $\pm 4$ kV, perf. criteria A		
	Air:	EN 61000-4-3, 10 V/m, perf. criteria A		
	Air:	EN 61000-4-4, $\pm 1$ kV, perf. criteria A		
	L to L:	EN 61000-4-5, $\pm 2$ kV, perf. criteria A		
	Continuous:	EN 61000-4-6, 10 Vrms, perf. criteria A		
	230 VAC / 50 Hz:	EN 61000-4-8, 30 A/m, perf. criteria A		
EMC / Environmental	EN 61000-4-11			
	30%, 25 periods, perf. criteria A			
60%, 10 periods, perf. criteria B				
>95%, 0.5 periods, perf. criteria A				
>95%, 250 periods, perf. criteria B				
100%, 1 period, perf. criteria A				
100%, 250 periods, perf. criteria B				
EMC / Environmental	115 VAC / 60 Hz: EN 61000-4-11			
	30%, 25 periods, perf. criteria A			
60%, 10 periods, perf. criteria B				
>95%, 0.5 periods, perf. criteria A				
>95%, 250 periods, perf. criteria B				
100%, 1 period, perf. criteria A				
100%, 250 periods, perf. criteria B				
<a href="http://www.tracopower.com/overview/tmpw5-t">www.tracopower.com/overview/tmpw5-t</a>				

## General Specifications

Relative Humidity	95% max. (non condensing)
Temperature Ranges	-40°C to +70°C
	-40°C to +85°C
Power Derating	2.5 %/K above 50°C (High Temperature) 2.0 %/K below -30°C (Low Temperature)
	See application note: <a href="http://www.tracopower.com/overview/tmpw5-t">www.tracopower.com/overview/tmpw5-t</a>
Cooling System	Natural convection (20 LFM)
Altitude During Operation	5'000 m max. (acc. IEC 62368-1) 2'000 m max. (acc. IEC 60335-1)
Switching Frequency	60 - 150 kHz (PWM, PFM)
Insulation System	Reinforced Insulation
Working Voltage (rated)	314 VAC
Isolation Test Voltage	4'000 VAC
Leakage Current	250 $\mu$ A max.
Reliability	450'000 h (MIL-HDBK-217F, ground benign)
Environment	IEC 60068-2-6 2 g, 3 axis, 60 min, 10-500 Hz, 10 min/cycle IEC 60068-2-27
	- Mechanical Shock

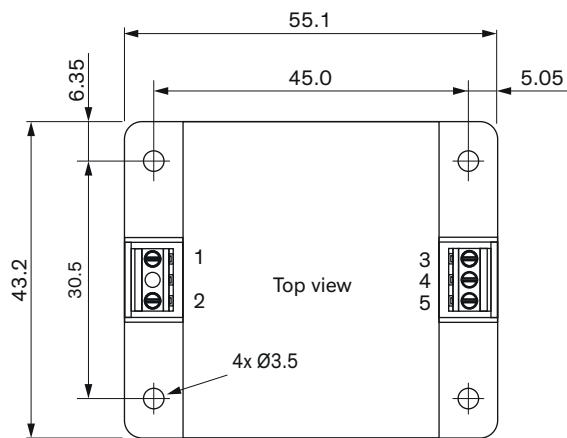
All specifications valid at 230 VAC, resistive full load and +25°C after warm-up time, unless otherwise stated.

Housing Material	Plastic resin (UL 94 V-0 rated)
Potting Material	Silicone (UL 94 V-0 rated)
Housing Type	Plastic Case
Mounting Type	Chassis Mount
Connection Type	Screw Terminal
Weight	60 g
Environmental Compliance	- REACH Declaration - RoHS Declaration - SCIP Reference Number
	<a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a> REACH SVHC list compliant REACH Annex XVII compliant <a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a> <b>Exemptions: 7(c)-I</b> (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).) 2850f896-dd56-4b18-a98b-adadb4b5a6dc

## Additional Information

Supporting Documents	<a href="http://www.tracopower.com/overview/tmpw5-t">www.tracopower.com/overview/tmpw5-t</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>

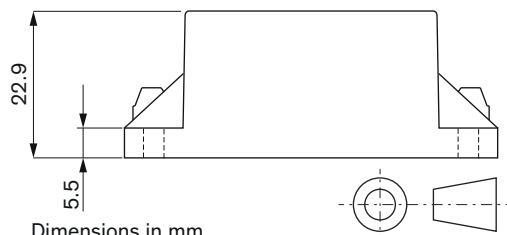
## Outline Dimensions



Pinout	
Pin	Single
1	AC IN (L)
2	AC IN (N)
3	-Vout
4	NC
5	+Vout

NC: Not connected

Connectors: EK381V-03P  
 Torque: 0.2 Nm (2 kgfcm)



Dimensions in mm  
 Tolerances:  $\pm 0.5$

Mounting screw locked torque: 0.29 Nm (3 kgfcm)