TRACO POWER

AC/DC Power Supply

TMPW 5 Series, 5 Watt

- **Compact PCB power module in 1.46" x 1.08" 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**

prepared

ready

Scheme

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

The TMPW 5 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 ±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 max.	Output Voltage nom.	Output Current max.	Efficiency typ.
TMPW 5-103	5 W	3.3 VDC	1'515 mA	73 %
TMPW 5-105		5 VDC	1'000 mA	77 %
TMPW 5-112		12 VDC	420 mA	81 %
TMPW 5-124		24 VDC	210 mA	83 %

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Input Specifications

Input Voltage	- AC Range	Operational Range:	90 - 305 VAC (Full Range)
		Rated Range:	100 - 277 VAC (Full Range)
	- DC Range	Operational Range:	100 - 430 VDC
		Certified Range:	100 - 250 VDC
		Polarity:	irrelevant
			(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:	47 - 440 Hz
		Certified:	50/60 Hz
Power Consumption	- No load & Vin = 230 VAC		100 mW max. (Ready to meet ErP directive)
	- No load & Vin = 115 VAC		100 mW max.
Input Current	- Full load & Vin = 230 VAC		90 mA max.
	- Full load & Vin = 115 VAC		150 mA max.
Input Inrush Current	- At 230 VAC		60 A max.
	- At 115 VAC		30 A max.
Recommended Input Fuse			1'600 mA (slow blow)
			(The need of an external fuse has to be assessed in the final application.)

Output Specifications

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

Safety Specifications

Standards	- IT / Multimedia Equipment	EN 62368-1
		IEC 62368-1
		UL 62368-1
	- Household	EN 60335-1
		IEC 60335-1
	- Power Transformers	IEC 61558-1
		IEC 61558-2-16
	- Certification Documents	www.tracopower.com/tmpw5-safety-cert/

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

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Protection Class			Class I & II (Prepared): Reinforced Insulation
		See application note:	www.tracopower.com/info/protection-class.pdf
Energy Source	- Output, acc. to 62368-1		ES1
Power Source	- Output, acc. to 62368-1		PS3
Pollution Degree			PD 2
Over Voltage Category			OVC II

EMC Specifications

EMI (Emissions)	- Conducted Emissions		EN 55032 class A (internal filter)
			EN 55032 class B (internal filter)
	- Radiated Emissions		EN 55032 class A (internal filter)
			EN 55032 class B (internal filter)
	- Harmonic Current Emissions		EN 61000-3-2, class A
	- Voltage Fluctuations & Flicker		EN 61000-3-3
EMS (Immunity)			EN 61000-6-2 (Generic Industrial)
			EN 55024 (IT Equipment)
			EN 55035 (Multimedia)
	- Electrostatic Discharge	Air:	EN 61000-4-2, ±8 kV, perf. criteria A
		Contact:	EN 61000-4-2, ±4 kV, perf. criteria A
	- RF Electromagnetic Field		EN 61000-4-3, 10 V/m, perf. criteria A
	- EFT (Burst) / Surge		EN 61000-4-4, ±1 kV, perf. criteria A
		L to L:	EN 61000-4-5, ±2 kV, perf. criteria A
	- Conducted RF Disturbances		EN 61000-4-6, 10 Vrms, perf. criteria A
	- PF Magnetic Field	Continuous:	EN 61000-4-8, 30 A/m, perf. criteria A
	- Voltage Dips & Interruptions	230 VAC / 50 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
		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
EMC / Environmental	- Certification Documents		www.tracopower.com/tmpw5-emc-cert/

General Specifications

Relative Humidity			95% max. (non condensing)
Temperature Ranges	- Operating Temperature		−40°C to +70°C
	- Storage Temperature		−40°C to +85°C
Power Derating	- High Temperature		2.5 %/K above 50°C
			2.0 %/K below −30°C
		See application note:	www.tracopower.com/tmpw5-cc/
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	- Input to Output, 60 s		4'000 VAC
Leakage Current	- Touch Current		250 µA max.
Reliability	- Calculated MTBF		450'000 h (MIL-HDBK-217F, ground benign)
Washing Process			Not allowed

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

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Environment	- Vibration	IEC 60068-2-6 2 g, 3 axis, 60 min, 10-500 Hz, 10 min/cycle
	- Mechanical Shock	IEC 60068-2-27
Housing Material		Plastic resin (UL 94 V-0 rated)
Potting Material		Silicone (UL 94 V-0 rated) (Hermetical sealed structure, dust-proof only non water-proof)
Pin Material		Brass
Pin Surface Plating		Tin (120 µm min.), matte
Housing Type		Plastic Case
Mounting Type		PCB Mount
Connection Type		THD (Through-Hole Device)
Soldering Profile		Lead-Free Wave Soldering 270°C / 3 s max.
Weight		24 g
Environmental Compliance	- REACH Declaration	www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant
	- RoHS Declaration	www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7(c)-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).)
	- SCIP Reference Number	79d4e69a-723c-47d9-b6f6-0ff48d488f7b

Additional Information

Supporting Documents	www.tracopower.com/overview/tmpw5
Frequently Asked Questions	www.tracopower.com/glossary-faq
Glossary	www.tracopower.com/info/glossary.pdf
Service Portal	www.tracoserviceportal.com

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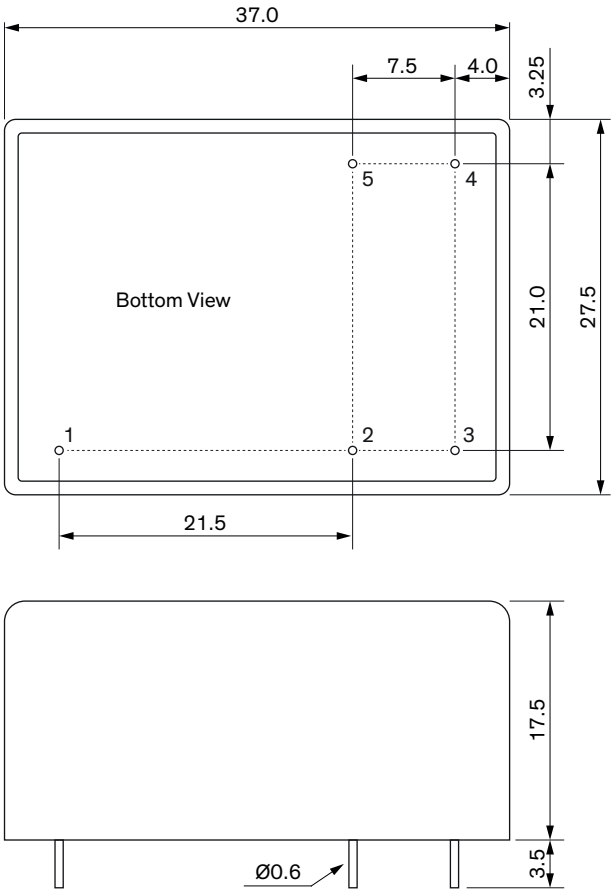
Outline Dimensions



Dimensions in mm
Tolerances: ±0.5
Pin diameter tolerance: ±0.05

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

NC: Not connected

Avoid routing PCB traces under the converter.

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