

- Ultra Compact 10 Watt PCB Power module in 1" x 1.5" package
- Certified to IEC/EN 60335-1 and UL 62368-1 for household and industrial appliance
- Reinforced I/O isolation 4000 VAC
- Operating temperature range -25°C to $+70^{\circ}\text{C}$
- Allows 130% peak current up to 30 s
- Ready to meet ErP directive, $< 0.15\text{ W}$ no load power consumption
- EMI meets EN 55032 class B and EN 55014-1
- Protection class II prepared
- 3-year product warranty



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

The TMPS 10 series comprises ultra compact AC/DC power supply modules in a lightweight fully encapsulated plastic casing for PCB mount. Beside the latest safety approvals for industrial and IT solutions (IEC/EN/UL 62368-1), they are also certified to IEC/EN 60335-1 for household appliance. These 10 Watt modules are the ideal solution for low power or segregated circuits when space is critical or for an efficient powering of a standby mode when compliance to ErP directive is required. A peak current of 130% facilitates the activation of main circuits.

Models					
Order Code	Output Power max.	Output Voltage nom.	Output Current max.	Output Current peak	Efficiency typ.
TMPS 10-103	8.6 W	3.3 VDC	2'600 mA	3'380 mA	77 %
TMPS 10-105	10 W	5 VDC	2'000 mA	2'600 mA	80 %
TMPS 10-109		9 VDC	1'100 mA	1'440 mA	83 %
TMPS 10-112		12 VDC	830 mA	1'080 mA	84 %
TMPS 10-115		15 VDC	660 mA	860 mA	84 %
TMPS 10-124		24 VDC	410 mA	530 mA	86 %
TMPS 10-148		48 VDC	210 mA	270 mA	84 %

Input Specifications

Input Voltage	- AC Range	Operational Range: 85 - 264 VAC (Full Range) Rated Range: 100 - 240 VAC (Full Range)
	- DC Range	Operational Range: 120 - 370 VDC (Designed for, no certification) Polarity: irrelevant
Input Frequency		Operational Range: 47 - 440 Hz
		Certified: 50/60 Hz
Power Consumption	- No load & Vin = 230 VAC	450 mW max.
	- No load & Vin = 115 VAC	150 mW max.
Input Inrush Current	- At 230 VAC	40 A max.
	- At 115 VAC	20 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)	0.5% max.
	- Load Variation (0 - 100%)	1% max.
Boost Power		Output Current peak: See model table Peak power time: 30 s max. Peak power duty cycle: 10% max. Average operation power: 10 W max.
Ripple and Noise (20 MHz Bandwidth)	3.3 VDC model:	60 mVp-p max.
	5 VDC model:	60 mVp-p max.
	9 VDC model:	90 mVp-p max.
	12 VDC model:	120 mVp-p max.
	15 VDC model:	150 mVp-p max.
	24 VDC model:	240 mVp-p max.
Capacitive Load	48 VDC model:	480 mVp-p max.
	3.3 VDC model:	4'400 µF max.
	5 VDC model:	2'200 µF max.
	9 VDC model:	680 µF max.
	12 VDC model:	390 µF max.
	15 VDC model:	240 µF max.
Minimum Load	24 VDC model:	100 µF max.
	48 VDC model:	24 µF max.
Temperature Coefficient		Not required
Hold-up Time		±0.02 %/K max.
Short Circuit Protection	- At 230 VAC	40 ms min.
	- At 115 VAC	8 ms min.
Output Current Limitation		Continuous, Automatic recovery
Overvoltage Protection		150% typ. of Iout max.
		125% typ. of Vout nom. (By Zener diode)

Safety Specifications

Standards	- IT / Multimedia Equipment	EN 62368-1 IEC 62368-1 UL 62368-1
	- Household	EN 60335-1 IEC 60335-1
	- Certification Documents	www.tracopower.com/overview/tmps10
	Protection Class	Class I & II (Prepared): Reinforced Insulation
See application note:		www.tracopower.com/info/protection-class.pdf

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

Pollution Degree	PD 2
Over Voltage Category	OVC II

EMC Specifications

EMI (Emissions)	- Conducted Emissions	EN 55014-1 (internal filter) EN 55032 class A (internal filter) EN 55032 class B (internal filter) FCC 47 Part 15 class A (internal filter) FCC 47 Part 15 class B (internal filter)
	- Radiated Emissions	EN 55014-1 (internal filter) EN 55032 class A (internal filter) EN 55032 class B (internal filter) FCC 47 Part 15 class A (internal filter) FCC 47 Part 15 class B (internal filter)
	- Harmonic Current Emissions	EN 61000-3-2
	- Voltage Fluctuations & Flicker	EN 61000-3-3
EMS (Immunity)		EN 55024 (IT Equipment) EN 55035 (Multimedia) EN 55014-2 (Household Appliances Tools)
	- Electrostatic Discharge	Air: EN 61000-4-2, ± 8 kV, perf. criteria A Contact: EN 61000-4-2, ± 6 kV, perf. criteria A EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, ± 2 kV, perf. criteria A
	- RF Electromagnetic Field	L to L: EN 61000-4-5, ± 1 kV, perf. criteria A EN 61000-4-6, 10 Vrms, perf. criteria A
	- EFT (Burst) / Surge	Continuous: EN 61000-4-8, 30 A/m, perf. criteria A 230 VAC / 50 Hz: EN 61000-4-11 30%, 25 periods, perf. criteria A >95%, 0.5 periods, perf. criteria A >95%, 250 periods, perf. criteria B
	- Conducted RF Disturbances	
	- PF Magnetic Field	
	- Voltage Dips & Interruptions	
EMC / Environmental	- Certification Documents	www.tracopower.com/overview/tmps10

General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-25°C to +70°C
	- Approved Ambient Temp.	+50°C max. (for compliance to 62368-1 and 60335-1)
	- Case Temperature	+95°C max.
	- Storage Temperature	-40°C to +85°C
Power Derating	- High Temperature	2.5 %/K above 50°C
	See application note:	www.tracopower.com/overview/tmps10
Cooling System		Natural convection (20 LFM)
Altitude During Operation		2'000 m max.
Switching Frequency		30 - 65 kHz (PWM)
		45 kHz typ. (PWM)
Insulation System		Reinforced Insulation
Working Voltage (rated)		244 VAC
Isolation Test Voltage	- Input to Output, 60 s	4'000 VAC
Isolation Resistance	- Input to Output, 500 VDC	1'000 MΩ min.
Leakage Current	- Touch Current	250 μA max.
Reliability	- Calculated MTBF	453'000 h (MIL-HDBK-217F, ground benign)
Washing Process		Not allowed
Housing Material		Plastic resin (UL 94 V-0 rated)
Potting Material		Silicone (UL 94 V-0 rated)
Pin Material		Copper Alloy (C6801)
Pin Foundation Plating		Nickel (2 - 4 μm)

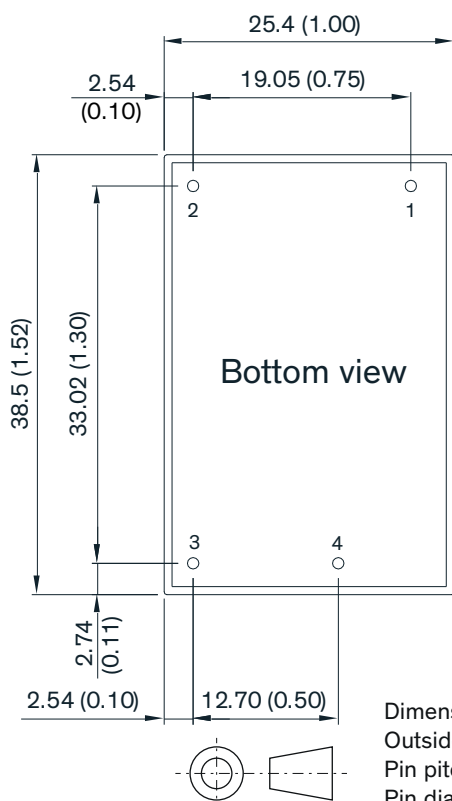
All specifications valid at 230 VAC, resistive full load and +25°C after warm-up time, unless otherwise stated.

Pin Surface Plating	Tin (3 - 5 μ m), matte
Housing Type	Plastic Case
Mounting Type	PCB Mount
Connection Type	THD (Through-Hole Device)
Soldering Profile	Lead-Free Wave Soldering 260°C / 10 s max.
Weight	29 g
Environmental Compliance	- REACH Declaration www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7(a) (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).) - RoHS Declaration - SCIP Reference Number ff22f0cd-e618-4e40-a6d5-fcf29f17a993

Additional Information

Supporting Documents	www.tracopower.com/overview/tmps10
Frequently Asked Questions	www.tracopower.com/glossary-faq
Glossary	www.tracopower.com/info/glossary.pdf

Outline Dimensions



Pin Connections	
Pin	Function
1	AC (N)
2	AC (L)
3	-Vout
4	+Vout