

AC/DC Power Supply

TMPW 10 Series, 10 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 86%**
- **Internal EN 55032 class B filter**
- **Protection class II prepared**
- **3-year product warranty**



The TMPW 10 is a 10 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 max.	Output Voltage nom.	Output Current max.	Efficiency typ.
TMPW 10-105	10 W	5 VDC	2'000 mA	81 %
TMPW 10-112		12 VDC	833 mA	85 %
TMPW 10-115		15 VDC	667 mA	86 %
TMPW 10-124		24 VDC	417 mA	86 %

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: +DC: N / -DC: L (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 & $V_{in} = 230$ VAC - No load & $V_{in} = 115$ VAC	100 mW max. (Ready to meet ErP directive) 100 mW max.
Input Current	- Full load & $V_{in} = 230$ VAC - Full load & $V_{in} = 115$ VAC	140 mA max. 230 mA max.
Input Inrush Current	- At 230 VAC - At 115 VAC	60 A max. 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 ($V_{min} - V_{max}$) - Load Variation (0 - 100%)	0.2% max. 1% max. (5 & 12 Vout models) 0.5 % max. (other models)
Ripple and Noise (20 MHz Bandwidth)	5 VDC model: 12 VDC model: 15 VDC model: 24 VDC model:	60 mVp-p max. (w/ 0.1 μ F 47 μ F) 120 mVp-p max. (w/ 0.1 μ F 47 μ F) 150 mVp-p max. (w/ 0.1 μ F 47 μ F) 240 mVp-p max. (w/ 0.1 μ F 47 μ F)
Capacitive Load	5 VDC model: 12 VDC model: 15 VDC model: 24 VDC model:	3'500 μF max. 700 μF max. 390 μF max. 180 μF max.
Minimum Load		Not required
Temperature Coefficient		±0.02 %/K max.
Hold-up Time	- At 230 VAC	30 ms min.
Start-up Time	- At 230 VAC - At 115 VAC	60 ms max. 60 ms max.
Short Circuit Protection		Continuous, Automatic recovery
Output Current Limitation		140 - 235% of Iout max.
Overvoltage Protection		105 - 145% of Vout nom. (By Zener diode)
Transient Response	- Response Deviation - Response Time	2% typ. / 3% max. (50% to 75% Load Step) 500 μs max. (50% to 75% Load Step)

Safety Specifications

Standards	- IT / Multimedia Equipment - Household - Power Transformers - Certification Documents	EN 62368-1 IEC 62368-1 UL 62368-1 EN 60335-1 IEC 60335-1 IEC 61558-1 IEC 61558-2-16 www.tracopower.com/overview/tmpw10
Protection Class		Class I & II (Prepared): Reinforced Insulation

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 - Radiated Emissions - Harmonic Current Emissions - Voltage Fluctuations & Flicker	EN 55032 class B (internal filter) EN 55032 class B (internal filter) EN 61000-3-2, class A EN 61000-3-3
EMS (Immunity)	- Electrostatic Discharge - RF Electromagnetic Field - EFT (Burst) / Surge - Conducted RF Disturbances - PF Magnetic Field - Voltage Dips & Interruptions	EN 61000-6-2 (Generic Industrial) EN 55024 (IT Equipment) EN 55035 (Multimedia) Air: EN 61000-4-2, ± 8 kV, perf. criteria A Contact: EN 61000-4-2, ± 4 kV, perf. criteria A EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, ± 2 kV, perf. criteria A L to L: EN 61000-4-5, ± 1 kV, perf. criteria A EN 61000-4-6, 10 Vrms, perf. criteria A 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 60%, 10 periods, perf. criteria A >95%, 0.5 periods, perf. criteria A >95%, 250 periods, perf. criteria B 100%, 0.5 periods, perf. criteria A 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 A >95%, 0.5 periods, perf. criteria A >95%, 250 periods, perf. criteria B 100%, 0.5 periods, perf. criteria A 100%, 1 period, perf. criteria A 100%, 250 periods, perf. criteria B
EMC / Environmental	- Certification Documents	www.tracopower.com/overview/tmpw10

General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature - Storage Temperature	-40°C to +70°C -40°C to +85°C
Power Derating	- High Temperature - Low Input Voltage	2.5 %/K above 50°C 2 %/V below 100 VAC See application note: www.tracopower.com/overview/tmpw10
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		35 - 75 kHz (PWM, PFM)
Insulation System		Reinforced Insulation
Working Voltage (rated)		254 VAC
Isolation Test Voltage	- Input to Output, 60 s	4'000 VAC
Leakage Current	- Touch Current	250 μ A max.
Reliability	- Calculated MTBF	450'000 h (MIL-HDBK-217F, ground benign)
Washing Process		Not allowed
Environment	- Vibration - Mechanical Shock	IEC 60068-2-6 2 g, 3 axis, 60 min, 10-500 Hz, 10 min/cycle IEC 60068-2-27
Housing Material		Plastic resin (UL 94 V-0 rated)

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

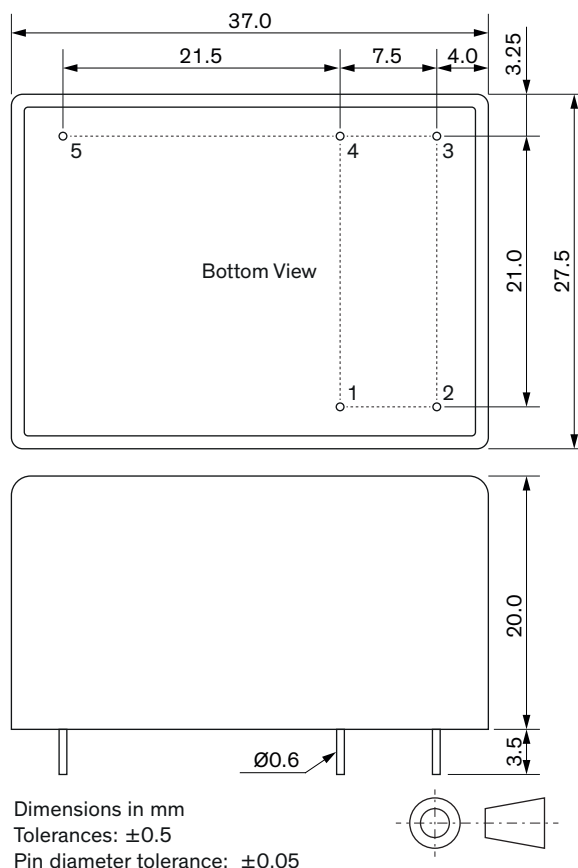
Potting Material	Silicone (UL 94 V-0 rated) (Hermetical sealed structure, dust-proof only non water-proof)
Pin Material	Brass
Pin Surface Plating	Tin (120 µm min.), matte
Housing Type	Plastic Case
Mounting Type	PCB Mount
Connection Type	THD (Through-Hole Device)
Soldering Profile	Lead-Free Wave Soldering 270°C / 3 s max.
Weight	31 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(c)-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).) 4a581b31-098c-465a-86ad-c16eed37056d
	- RoHS Declaration
	- SCIP Reference Number

Supporting Documents

Overview Link (for additional Documents)

www.tracopower.com/overview/tmpw10

Outline Dimensions



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

NC: Not connected