

- Fully encapsulated, dust resistant, and waterproof (IP68 certified)
- Operating temperature range -20° to $+80^{\circ}\text{C}$
- Mountable in wall outlet boxes
- Screw mountable on wood and inside furniture
- Safety approval IEC/EN 62368-1 and IEC/EN 60335-1
- 2xMOPP certified according to IEC/EN 60601-1 3rd edition
- Leakage current $< 100 \mu\text{A}$ for body-floating (BF) applications
- I/O isolation 4000 VAC (reinforced)
- Short-circuit protection (SCP), overvoltage protection (OVP) and overtemperature protection (OTP)
- 5-year product warranty



The TMW 36P is a series of fully encapsulated AC/DC power supplies designed for medical, household, and industrial applications. All models come in compact, dust resistant, and waterproof IP68 housings, are IEC/EN 62368-1, IEC/EN 60335-1 and IEC/EN 60601-1 3rd edition compliant and are certified for 2xMOPP. Featuring a reinforced isolation, the TMW 36P power supplies are prepared for protection class II applications. Their wide operating temperature range from -20°C to $+80^{\circ}\text{C}$ makes them ideal candidates for demanding applications.

Models

Order Code	Output Power max.	Output Voltage nom.	Output Current max.	Efficiency typ.
TMW 36-112P	36 W	12 VDC	3 A	87 %
TMW 36-124P		24 VDC	1.5 A	88 %

Input Specifications

Input Voltage		85 - 264 VAC (Full Range)
Input Frequency		47 - 63 Hz
Power Consumption	- At no load	200 mW max. (Ready to meet ErP directive)
Input Inrush Current	- At 230 VAC	50 A max.
	- At 115 VAC	25 A max.
Power Factor	- At 230 VAC	0.45 min.
	- At 115 VAC	0.55 min.
Input Protection		T 2 A (Internal Fuse)
Recommended Input Fuse		(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 (10 - 90%)	1% max.
Ripple and Noise (20 MHz Bandwidth)		195 mVp-p max.
Capacitive Load		10'000 µF max.
Minimum Load		Not required
Temperature Coefficient		±2 %/K max.
Hold-up Time	- At 230 VAC	40 ms min.
	- At 115 VAC	7 ms min.
Start-up Time	- At 230 VAC	500 ms max.
	- At 115 VAC	500 ms max.
Start-up Overshoot Voltage		5% max.
Short Circuit Protection		Continuous, Automatic recovery
Output Current Limitation		105 - 150% of Iout max.
Overvoltage Protection		130% typ. of Vout nom.
		120 - 160% of Vout nom.
Transient Response	- Response Deviation	5% max. (10% to 90% Load Step)
	- Response Time	2'000 µs max. (10% to 90% Load Step)

Safety Specifications

Safety Standards	- IT / Multimedia Equipment	EN 62368-1 IEC 62368-1
	- Household	EN 60335-1 IEC 60335-1
	- Medical Equipment	EN 60601-1 IEC 60601-1
	- LED Modules Controlgear	ANSI/AAMI ES 60601-1
	- Luminaires for Furniture	CSA-C22.2, No 60601-1
	- Power Transformers	EN 61347-2-13 VDE 0710-14
		EN 61558-1 IEC 61558-1
		EN 61558-2-8 IEC 61558-2-8
		EN 61558-2-16 IEC 61558-2-16
		- Certification Documents
Protection Class		Class I & II (Prepared): Reinforced Insulation
Pollution Degree		PD 2
Over Voltage Category		OVC II

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

EMC Specifications

EMI Emissions		EN 61000-6-3 (Generic Residential)
	- Conducted Emissions	EN 61204-3 (Low Voltage Power Supplies)
		EN 55011 class B (internal filter)
		EN 55032 class B (internal filter)
	- Radiated Emissions	EN 55011 class B (internal filter)
		EN 55032 class B (internal filter)
	- Harmonic Current Emissions	EN 61000-3-2, class A
EMS Immunity		EN 61000-6-2 (Generic Industrial)
	- RF Electromagnetic Field	EN 60601-1-2 edition 4 (Medical Devices)
	- EFT (Burst) / Surge	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
	- 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 A
		>95%, 250 periods, perf. criteria B
		>95%, 5 periods, perf. criteria B
		20%, 250 periods, perf. criteria A
		115 VAC / 60 Hz: EN 61000-4-11
		30%, 25 periods, perf. criteria B
		60%, 10 periods, perf. criteria B
		>95%, 250 periods, perf. criteria B
		>95%, 5 periods, perf. criteria B
		20%, 250 periods, perf. criteria A

General Specifications

Relative Humidity		100% max.
Temperature Ranges		
	- Operating Temperature	-20°C to +80°C
	- Storage Temperature	-40°C to +90°C
Power Derating		
	- High Temperature	2 %/K above 50°C (at $V_{in} \geq 187$ VAC)
		2 %/K above 40°C (at $V_{in} < 187$ VAC)
		See application note: www.tracopower.com/overview/tmw36p
	- Low Input Voltage	2 %/V below 100 VAC
Over Temperature Protection Switch Off		
	- Protection Mode	85°C min. / 90°C typ. / 95°C max. (Automatic recovery)
	- Measurement Point	Case
Cooling System		Natural convection (20 LFM)
Altitude During Operation		5'000 m max. (4'000 m max for IEC 61558-2-8)
Switching Frequency		25 - 140 kHz (PWM QR)
Insulation System		Reinforced Insulation
Isolation Test Voltage		
	- Input to Output, 60 s	4'000 VAC
	- Input to Output, 1 s	4'000 VAC
Creepage		8 mm min.
Clearance		8 mm min.
Isolation Resistance		100 M Ω min.
Isolation Capacitance		1100 pF typ.
Leakage Current		100 μ A max.
Reliability		
	- Calculated MTBF	3'400'000 h (see application note) (IEC 61709)

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

Environment	- Vibration - Mechanical Shock	IEC 60068-2-6 3 g, 3 axis, sine sweep, 10-55 Hz, 1 oct/min IEC 60068-2-27 25 g, 3 axis, half sine, 11 ms
Case Ingress Protection		IP68 (acc. IEC 60529)
Housing Material		Plastic (UL 94 V-0 rated)
Potting Material		Epoxy (UL 94 V-0 rated)
Pin Material		Brass (Alloy 360/385)
Pin Surface Plating		Tin (200 - 300 µm), matte
Connection Type		THD (Through-Hole Device)
Weight	- single output	12 VDC model: 143 g 24 VDC model: 145 g
Power Back Immunity		12 VDC model: 15 V max. 24 VDC model: 30 V max.
Environmental Compliance	- REACH Declaration - RoHS Declaration	www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant www.tracopower.com/info/rohs-declaration.pdf Exemptions: 6a, 6c, 7a, 7c-I, 7c-II

Supporting Documents

Overview Link (for additional Documents)

www.tracopower.com/overview/tmw36p

Outline Dimensions

