

- Fully encapsulated, dust resistant, and waterproof (IP68 certified)
- Operating temperature range -20° to +80°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 µA 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°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		Operational Range: 85 - 264 VAC (Full Range) Rated Range: 100 - 240 VAC (Full Range)
Input Frequency		Operational Range: 47 - 63 Hz Certified: 50/60 Hz
Power Consumption	- No load & $V_{in} = 230$ VAC	200 mW max. (Ready to meet ErP directive)
	- No load & $V_{in} = 115$ VAC	200 mW max.
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 ($V_{min} - V_{max}$)	0.5% max.
	- Load Variation (10 - 90%)	1% max.
Ripple and Noise (20 MHz Bandwidth)	12 VDC model:	195 mVp-p max. (w/ 0.1 μ F / 50 V)
	24 VDC model:	195 mVp-p max.
Capacitive Load		10'000 μ F 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 I_{out} max.
Overvoltage Protection		130% typ. of V_{out} nom.
		120 - 160% of V_{out} nom.
Transient Response	- Response Deviation	5% max. (10% to 90% Load Step)
	- Response Time	2'000 μ s max. (10% to 90% Load Step)

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

Safety Specifications

Safety Standards	- IT / Multimedia Equipment	EN 62368-1 IEC 62368-1 UL 62368-1
	- Household	EN 60335-1 IEC 60335-1
	- Medical Equipment	EN 60601-1 IEC 60601-1 ANSI/AAMI ES 60601-1 CSA-C22.2, No 60601-1 2 x MOPP (Means Of Patient Protection)
	- LED Modules Controlgear - Luminaires for Furniture - 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	www.tracopower.com/overview/tmw36p
Protection Class		Class I & II (Prepared): Reinforced Insulation
Pollution Degree		PD 2
Over Voltage Category		OVC II

EMC Specifications

EMI Emissions	- Conducted Emissions	EN 61000-6-3 (Generic Residential) 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	- RF Electromagnetic Field - EFT (Burst) / Surge	EN 61000-6-2 (Generic Industrial) EN 60601-1-2 edition 4 (Medical Devices) 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 - PF Magnetic Field - Voltage Dips & Interruptions	Continuous: EN 61000-4-6, 10 Vrms, perf. criteria A 230 VAC / 50 Hz: EN 61000-4-8, 30 A/m, perf. criteria A EN 61000-4-11 20%, 250 periods, perf. criteria A 30%, 25 periods, perf. criteria A 60%, 10 periods, perf. criteria A >95%, 5 periods, perf. criteria B >95%, 250 periods, perf. criteria B 115 VAC / 60 Hz: EN 61000-4-11 20%, 250 periods, perf. criteria A 30%, 25 periods, perf. criteria B 60%, 10 periods, perf. criteria B >95%, 5 periods, perf. criteria B >95%, 250 periods, perf. criteria B

General Specifications

Relative Humidity		100% max.
Temperature Ranges	- Operating Temperature	-20°C to +80°C
	- Storage Temperature	-40°C to +90°C

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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)
	- 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	- Input to Output	8 mm min.
Clearance	- Input to Output	8 mm min.
Isolation Resistance	- Input to Output, 500 VDC	100 MΩ min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	1'100 pF typ. / 1'300 pF max.
Leakage Current (at 240 VAC / 60 Hz)	- Touch Current	100 μA max.
Distance Through Isolation		2 mm
Reliability	- Calculated MTBF	3'400'000 h (see application note) (IEC 61709)
Washing Process		Not allowed
Environment	- Vibration	IEC 60068-2-6 3 g, 3 axis, sine sweep, 10-55 Hz, 1 oct/min
	- Mechanical Shock	IEC 60068-2-27 25 g, 3 axis, half sine, 11 ms
Case Ingress Protection		IP 68 (acc. IEC 60529)
Housing Material		Plastic (UL 94 V-1 rated)
Potting Material		Polyurethane (UL 94 V-2 rated)
Pin Material		Brass (Alloy 360/385)
Pin Surface Plating		Tin (200 - 300 μm), matte
Housing Type		Plastic Case
Mounting Type		PCB Mount
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	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: 7a, 7c-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule). The SCIP number is provided on request.)

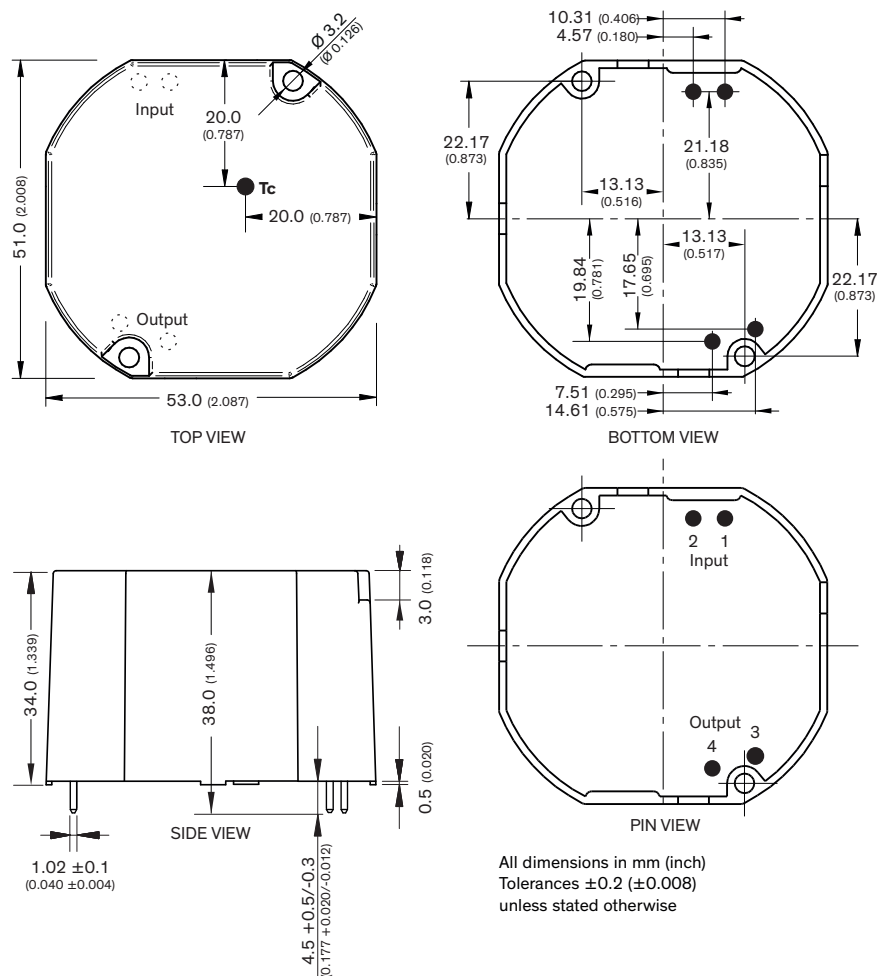
Supporting Documents

Overview Link (for additional Documents)

www.tracopower.com/overview/tmw36p

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Outline Dimensions



Pinout

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