

- Fully encapsulated, dust resistant, and waterproof (IP68 certified)
- Operating temperature range  $-20^{\circ}$  to  $+80^{\circ}\text{C}$
- Mountable in wall outlet boxes, with flying leads
- 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 24 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 24 power supplies are prepared for protection class II applications. Their wide operating temperature range from  $-20^{\circ}\text{C}$  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 24-105	20.4 W	5.1 VDC	4 A	85 %
TMW 24-112	24 W	12 VDC	2 A	88 %
TMW 24-124		24 VDC	1 A	89 %

### 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. (12 Vout and 24 Vout model)
		2% max. (5 Vout model)
Ripple and Noise (20 MHz Bandwidth)		140 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 ANSI/AAMI ES 60601-1 CSA-C22.2, No 60601-1
	- LED Modules Controlgear	EN 61347-2-13
	- Luminaires for Furniture	VDE 0710-14
	- Power Transformers	EN 61558-1 IEC 61558-1 EN 61558-2-8 IEC 61558-2-8 EN 61558-2-16 IEC 61558-2-16
	- Certification Documents	<a href="http://www.tracopower.com/overview/tmw24">www.tracopower.com/overview/tmw24</a>
	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

<b>EMI Emissions</b>		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)
- Conducted Emissions		EN 55011 class B (internal filter) EN 55032 class B (internal filter)
- Radiated Emissions		EN 61000-3-2, class A
- Harmonic Current Emissions		
<b>EMS Immunity</b>		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
- RF Electromagnetic Field		L to L: EN 61000-4-5, ±1 kV, perf. criteria A
- EFT (Burst) / Surge		EN 61000-4-6, 10 Vrms, perf. criteria A
- Conducted RF Disturbances		Continuous: EN 61000-4-8, 30 A/m, perf. criteria A
- PF Magnetic Field		230 VAC / 50 Hz: EN 61000-4-11
- Voltage Dips & Interruptions		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

<b>Relative Humidity</b>		100% max.
<b>Temperature Ranges</b>	- Operating Temperature	-20°C to +80°C
	- Storage Temperature	-40°C to +90°C
<b>Power Derating</b>	- High Temperature	2 %/K above 50°C
	- Low Input Voltage	2 %/V below 100 VAC
<b>Over Temperature Protection Switch Off</b>	- Protection Mode	85°C min. / 90°C typ. / 95°C max. (Automatic recovery)
	- Measurement Point	Case
<b>Cooling System</b>		Natural convection (20 LFM)
<b>Altitude During Operation</b>		5'000 m max. (4'000 m max. for IEC 61558-2-8)
<b>Switching Frequency</b>		25 - 140 kHz (PWM QR)
<b>Insulation System</b>		Reinforced Insulation
<b>Isolation Test Voltage</b>	- Input to Output, 60 s	4'000 VAC
	- Input to Output, 1 s	4'000 VAC
<b>Creepage</b>	- Input to Output	8 mm min.
<b>Clearance</b>	- Input to Output	8 mm min.
<b>Isolation Resistance</b>	- Input to Output, 500 VDC	100 MΩ min.
<b>Isolation Capacitance</b>	- Input to Output, 100 kHz, 1 V	1100 pF typ.
<b>Leakage Current</b> (at 240 VAC / 60 Hz)	- Touch Current	100 μA max.
<b>Reliability</b>	- Calculated MTBF	3'400'000 h (see application note) (IEC 61709)
<b>Environment</b>	- 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

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

Case Ingress Protection	IP68 (acc. IEC 60529)
Housing Material	Plastic (UL 94 V-0 rated)
Potting Material	Epoxy (UL 94 V-0 rated)
Connection Type	Wired
Weight	131 g
Power Back Immunity	5.1 VDC model: 6.4 V max. 12 VDC model: 15 V max. 24 VDC model: 30 V max.

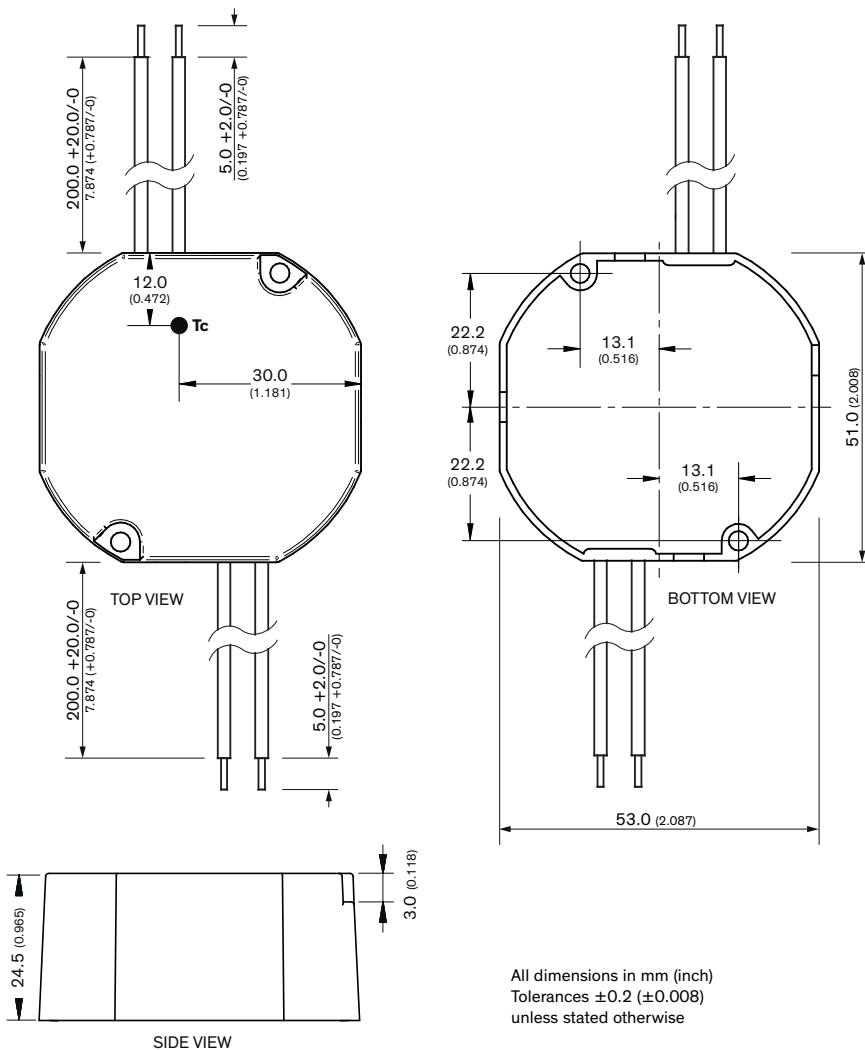
Environmental Compliance - REACH Declaration	<a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a> REACH SVHC list compliant REACH Annex XVII compliant
- RoHS Declaration	<a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a> Exemptions: 6a, 6c, 7a, 7c-I, 7c-II

### Supporting Documents

Overview Link (for additional Documents)

[www.tracopower.com/overview/tmw24](http://www.tracopower.com/overview/tmw24)

### Outline Dimensions



Connection Details			
Wire	Function	Color	Type
1	AC (N)	Blue	20AWG / 0.52mm <sup>2</sup>
2	AC (L)	Brown	20AWG / 0.52mm <sup>2</sup>
3	- Vout	Black	20AWG / 0.52mm <sup>2</sup>
4	+ Vout	Red	20AWG / 0.52mm <sup>2</sup>