

- Fully encapsulated, dust resistant, and waterproof (IP68 certified)
- Operating temperature range -20° to $+80^{\circ}\text{C}$
- Mountable in wall outlet boxes
- 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 | 3'000 mA | 87 % |
| TMW 36-124P | | 24 VDC | 1'500 mA | 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 & Vin = 230 VAC - No load & Vin = 115 VAC | 200 mW max. (Ready to meet ErP directive) 200 mW max. |
| Input Inrush Current | - At 230 VAC - At 115 VAC | 50 A max. 25 A max. |
| Power Factor | - At 230 VAC - At 115 VAC | 0.45 min. 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) - Load Variation (10 - 90%) | 0.5% max. 1% max. |
| Ripple and Noise (20 MHz Bandwidth) | | 12 VDC model: 195 mVp-p max. (w/ 0.1 µF / 50 V) 24 VDC model: 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 - At 115 VAC | 40 ms min. 7 ms min. |
| Start-up Time | - At 230 VAC - At 115 VAC | 500 ms max. 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 | | 120 - 160% of Vout nom. 130% typ. of Vout nom. |
| Transient Response | - Response Deviation - Response Time | 5% max. (10% to 90% Load Step) 2'000 µs max. (10% to 90% Load Step) |

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

Safety Specifications

| | | |
|-----------------------|-----------------------------|--|
| 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 | 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 | 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 | EN 61000-6-2 (Generic Industrial) EN 60601-1-2 edition 4.1 (Medical Devices) EN 61000-4-3, 10 V/m, perf. criteria A |
| | - EFT (Burst) / Surge | 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 20%, 250 periods, perf. criteria A 30%, 25 periods, perf. criteria A 60%, 10 periods, perf. criteria A >95%, 5 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 |
| EMC / Environmental | - Certification Documents | www.tracopower.com/overview/tmw36p |

General Specifications

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

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

| | | |
|--|---------------------------------|---|
| 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) |
| Regulator Topology | | Flyback Converter |
| 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) |
| Soldering Profile | | Lead-Free Wave Soldering 260°C / 4 s max. |
| 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)) |
| | - SCIP Reference Number | e425dd0d-e647-4e75-91c8-1005009631d0 |

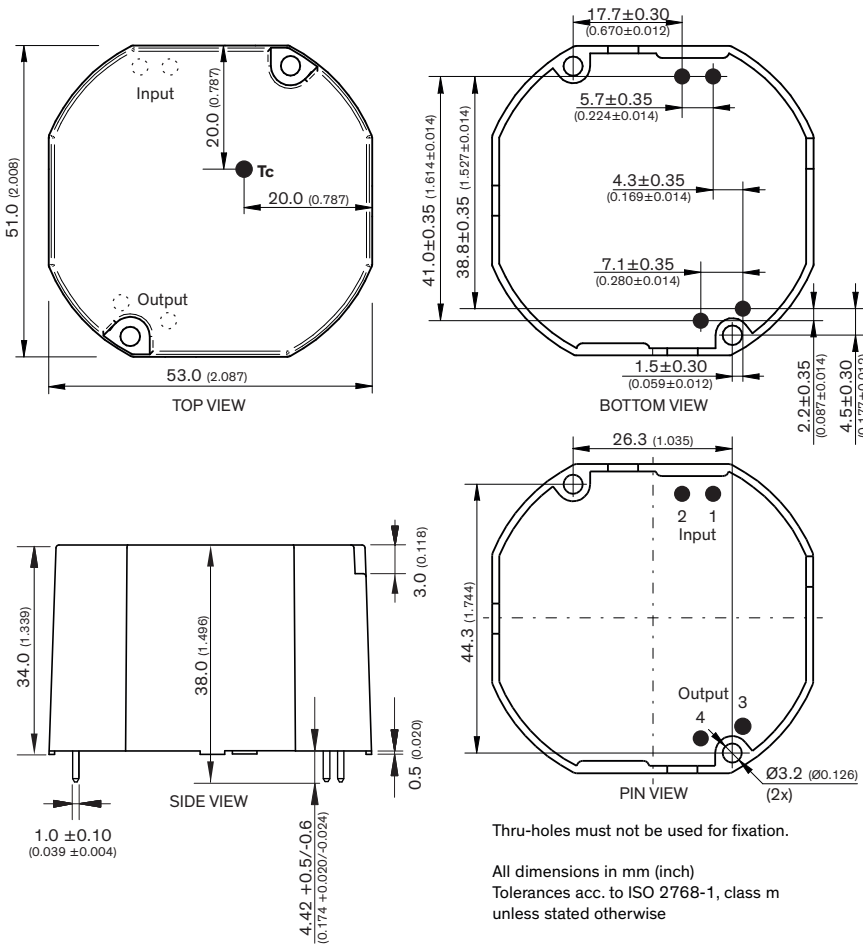
Supporting Documents

Overview Link (for additional Documents)

www.tracopower.com/overview/tmw36p

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

Outline Dimensions



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

Thru-holes must not be used for fixation.

All dimensions in mm (inch)
Tolerances acc. to ISO 2768-1, class m
unless stated otherwise