AC/DC Power Supply

TMPW 50-T Series, 50 Watt

• Compact chassis mount power module in 3.82” x 1.90” package
• Wide input voltage range 90-305 VAC
• Certified according to EN 60335-1 an 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 89%
• Internal EN 55032 class B filter
• Protection class II prepared
• 3-year product warranty

The TMPW 50-T is a 50 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 ±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

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>TMPW 50-112-T</td>
<td>TMPW 50-112-J</td>
<td>50 W</td>
<td>12 VDC</td>
<td>4'167 mA</td>
<td>89 %</td>
</tr>
<tr>
<td>TMPW 50-115-T</td>
<td>TMPW 50-115-J</td>
<td></td>
<td>15 VDC</td>
<td>3'333 mA</td>
<td>88 %</td>
</tr>
<tr>
<td>TMPW 50-124-T</td>
<td>TMPW 50-124-J</td>
<td></td>
<td>24 VDC</td>
<td>2'083 mA</td>
<td>88 %</td>
</tr>
</tbody>
</table>

Options


Note - * Technically identical series with JST connectors available. See: www.tracopower.com/overview/tmpw50-j
Continuous, 130
Page 130
EN 3'000 ±2
Class 120
130
130
2
100
EN 150
50/60
10
www.tracopower.com/overview/tmpw50-t
90
OVC
12
90
47
100
IEC 500
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: irrelevant
(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

Input Current
- Full Load & Vin = 230 VAC
- Full Load & Vin = 115 VAC
600 mA max.
1'000 mA max.

Power Consumption
- No load & Vin = 230 VAC
- No load & Vin = 115 VAC
100 mW max. (Ready to meet ErP directive)
100 mW max.

Input Inrush Current
- At 230 VAC
- At 115 VAC
90 A max.
45 A max.

Recommended Input Fuse
2’500 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 (Vmin - Vmax)
- Load Variation (0 - 100%)
2% max.
2.5% max.

Ripple and Noise
(20 MHz Bandwidth)
12 VDC model: 120 mVp-p max. (w/ 0.1 µF || 47 µF)
15 VDC model: 150 mVp-p max. (w/ 0.1 µF || 47 µF)
24 VDC model: 240 mVp-p max. (w/ 0.1 µF || 47 µF)

Capacitive Load
12 VDC model: 3’500 µF max.
15 VDC model: 3’000 µF max.
24 VDC model: 2’200 µF max.

Minimum Load
Not required
Temperature Coefficient
±0.05 %/K max.
Hold-up Time
- At 230 VAC
10 ms min.
Start-up Time
- At 230 VAC
130 ms max.
- At 115 VAC
130 ms max.

Short Circuit Protection
Continuous, Automatic recovery
Output Current Limitation
130 - 215% 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)
50 µs max. (50% to 75% Load Step)

Safety Specifications
Standards
- IT / Multimedia Equipment
EN 62368-1
IEC 62368-1
UL 62368-1
- Household
EN 60335-1
IEC 60335-1
- Power Transformers
IEC 61558-1
IEC 61558-2-16
- Certification Documents
www.tracopower.com/overview/tmpw50-t

Protection Class
Class I & II (Prepared): Reinforced Insulation
Pollution Degree
PD 2
Over Voltage Category
OVC II

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

<table>
<thead>
<tr>
<th>EMI Emissions</th>
<th>EN 55032 class B (internal filter)</th>
<th>EN 55032 class B (internal filter)</th>
<th>EN 61000-3-2, class A</th>
<th>EN 61000-3-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Conducted Emissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Radiated Emissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Harmonic Current Emissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>- Voltage Fluctuations &amp; Flicker</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EMS Immunity</th>
<th>EN 61000-6-2 (generic industrial)</th>
<th>EN 55024 (IT Equipment)</th>
<th>EN 55035 (Multimedia)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Electrostatic Discharge</td>
<td>EN 61000-4-2, ±8 kV, perf. criteria A</td>
<td>EN 61000-4-2, ±4 kV, perf. criteria A</td>
<td>EN 61000-4-3, 10 V/m, perf. criteria A</td>
</tr>
<tr>
<td>- RF Electromagnetic Field</td>
<td>EN 61000-4-4, ±2 kV, perf. criteria A</td>
<td>EN 61000-4-5, ±1 kV, perf. criteria A</td>
<td></td>
</tr>
<tr>
<td>- EFT (Burst) / Surge</td>
<td>EN 61000-4-6, 10 Vrms, perf. criteria A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Conducted RF Disturbances</td>
<td>Continuous: 230 VAC / 50 Hz:</td>
<td>EN 61000-4-8, 30 A/m, perf. criteria A</td>
<td></td>
</tr>
</tbody>
</table>

### General Specifications

<table>
<thead>
<tr>
<th>Relative Humidity</th>
<th>95% max., (non condensing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Ranges</td>
<td>- Operating Temperature: -40°C to +70°C</td>
</tr>
<tr>
<td></td>
<td>- Storage Temperature: -40°C to +85°C</td>
</tr>
<tr>
<td></td>
<td>(Max operating temperature must be derated by 3.5°C / 1000 m above 2000 m)</td>
</tr>
<tr>
<td>Power Derating</td>
<td>2.5 %/K above 50°C</td>
</tr>
<tr>
<td></td>
<td>2 %/V below 100 VAC</td>
</tr>
</tbody>
</table>

See application note: [www.tracopower.com/overview/tmpw50-t](http://www.tracopower.com/overview/tmpw50-t)

<table>
<thead>
<tr>
<th>Cooling System</th>
<th>Natural convection (20 LFM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altitude During Operation</td>
<td>5'000 m max. (acc. IEC 62368-1)</td>
</tr>
<tr>
<td></td>
<td>2'000 m max. (acc. IEC 60335-1)</td>
</tr>
<tr>
<td>Switching Frequency</td>
<td>55 - 90 kHz (PWM, PFM)</td>
</tr>
<tr>
<td>Insulation System</td>
<td>Reinforced Insulation</td>
</tr>
<tr>
<td>Working Voltage (rated)</td>
<td>342 VAC</td>
</tr>
<tr>
<td>Isolation Test Voltage</td>
<td>- Input to Output: 60 s 4'000 VAC</td>
</tr>
<tr>
<td></td>
<td>- Touch Current: 250 µA max.</td>
</tr>
<tr>
<td>Reliability</td>
<td>- Calculated MTBF: 300'000 h (MIL-HDBK-217F, ground benign)</td>
</tr>
<tr>
<td>Environment</td>
<td>- Vibration: IEC 60068-2-6 2 g, 3 axis, 60 min, 10-500 Hz, 10 min/cycle</td>
</tr>
<tr>
<td></td>
<td>- Mechanical Shock: IEC 60068-2-27</td>
</tr>
<tr>
<td>Housing Material</td>
<td>Plastic resin (UL 94 V-0 rated)</td>
</tr>
<tr>
<td>Potting Material</td>
<td>Silicone (UL 94 V-0 rated)</td>
</tr>
<tr>
<td>Housing Type</td>
<td>Plastic Case</td>
</tr>
</tbody>
</table>

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

### Connection Type
- Screw Terminal

### Weight
- 180 g

### Environmental Compliance
- REACH Declaration
  - www.tracopower.com/info/reach-declaration.pdf
- REACH SVHC list compliant
- REACH Annex XVII compliant
  - www.tracopower.com/info/reach-declaration.pdf
- RoHS Declaration
  - www.tracopower.com/info/rohs-declaration.pdf
- Exemptions: 7c-I
  - (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule)).
- SCIP Reference Number
  - e14d7842-ae65-4a0a-bfe2-5753c8b043dc

### Supporting Documents
- Overview Link (for additional Documents)
  - www.tracopower.com/overview/tmpw50-t

### Outline Dimensions

#### Pinout
<table>
<thead>
<tr>
<th>Pin</th>
<th>Single</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC IN (N)</td>
</tr>
<tr>
<td>2</td>
<td>AC IN (L)</td>
</tr>
<tr>
<td>3</td>
<td>–Vout</td>
</tr>
<tr>
<td>4</td>
<td>NC</td>
</tr>
<tr>
<td>5</td>
<td>+Vout</td>
</tr>
</tbody>
</table>

- NC: Not connected
- Connectors: EK381V-03P
- Torque: 0.3 Nm (3 kgfcm)

#### Top View
- Dimensions in mm (inch)
- Tolerances: x.x ±0.5 (±0.02)
- Mounting screw locked torque: 0.2 Nm (2 kgfcm)