AC/DC Power Supply

• Compact chassis mount power module in 2.17” x 1.70” 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 83%
• Internal EN 55032 class B filter
• Protection class II prepared
• 3 year product warranty

The TMPW 5-J is a 5 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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</thead>
<tbody>
<tr>
<td>TMPW 5-103-J</td>
<td>TMPW 5-103-T</td>
<td>5 W</td>
<td>3.3 VDC</td>
<td>1'515 mA</td>
<td>73 %</td>
</tr>
<tr>
<td>TMPW 5-105-J</td>
<td>TMPW 5-105-T</td>
<td></td>
<td>5 VDC</td>
<td>1'000 mA</td>
<td>77 %</td>
</tr>
<tr>
<td>TMPW 5-112-J</td>
<td>TMPW 5-112-T</td>
<td></td>
<td>12 VDC</td>
<td>420 mA</td>
<td>81 %</td>
</tr>
<tr>
<td>TMPW 5-124-J</td>
<td>TMPW 5-124-T</td>
<td></td>
<td>24 VDC</td>
<td>210 mA</td>
<td>83 %</td>
</tr>
</tbody>
</table>

Options


Note: * Technically identical series with screw terminals available. See: www.tracopower.com/overview/tmpw5-t
## Input Specifications

<table>
<thead>
<tr>
<th>Input Voltage</th>
<th>Operational Range:</th>
<th>Rated Range:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- AC Range</td>
<td>90 - 305 VAC (Full Range)</td>
<td>100 - 277 VAC (Full Range)</td>
</tr>
<tr>
<td>- DC Range</td>
<td>100 - 430 VDC (Certified Range)</td>
<td>100 - 250 VDC</td>
</tr>
</tbody>
</table>

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
- Full Load & Vin = 230 VAC: 47 Hz max.
- Full Load & Vin = 115 VAC: 50 Hz max.
Certified: 47 - 440 Hz

### Input Current
- No load & Vin = 230 VAC: 100 mA max.
- No load & Vin = 115 VAC: 100 mA max.

### Power Consumption
- At 230 VAC: 60 A max.
- At 115 VAC: 30 A max.

### Input Inrush Current
- At 230 VAC: 60 A max.
- At 115 VAC: 30 A max.

### Recommended Input Fuse
1'600 mA (slow blow)
(The need of an external fuse has to be assessed in the final application.)

### Output Specifications

<table>
<thead>
<tr>
<th>Voltage Set Accuracy</th>
<th>±2% max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation</td>
<td>0.2% max. (3.3 &amp; 5 Vout models)</td>
</tr>
<tr>
<td>- Input Variation (Vmin - Vmax)</td>
<td>0.1 % max. (other models)</td>
</tr>
<tr>
<td>- Load Variation (0 - 100%)</td>
<td>1% max. (3.3 Vout model)</td>
</tr>
<tr>
<td>0.5 % max. (other models)</td>
<td></td>
</tr>
</tbody>
</table>

### Ripple and Noise (20 MHz Bandwidth)
- 3.3 VDC model: 60 mVp-p max. (w/ 0.1 µF || 47 µF)
- 5 VDC model: 60 mVp-p max. (w/ 0.1 µF || 47 µF)
- 12 VDC model: 120 mVp-p max. (w/ 0.1 µF || 47 µF)
- 24 VDC model: 200 mVp-p max. (w/ 0.1 µF || 47 µF)

### Capacitive Load
- 3.3 VDC model: 3'500 µF max.
- 5 VDC model: 2'500 µF max.
- 12 VDC model: 470 µF max.
- 24 VDC model: 150 µF max.

### Minimum Load
Not required

### Temperature Coefficient
±0.02 %/K max.

### Hold-up Time
- At 230 VAC: 15 ms min.
- At 115 VAC: 60 ms max.

### Start-up Time
- At 230 VAC: 60 ms max.
- At 115 VAC: 60 ms max.

### Short Circuit Protection
Continuous, Automatic recovery

### Output Current Limitation
115 - 195% of Iout max.

### Overvoltage Protection
105 - 145% of Vout nom.
(By Zener diode)

### Transient Response
- Response Deviation: 2% typ. / 3% max. (50% to 75% Load Step)
- Response Time: 500 µs max. (50% to 75% 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
- Power Transformers: IEC 61558-1, IEC 61558-2-16
- Certification Documents: [www.tracopower.com](http://www.tracopower.com)

### Protection Class
- Class I & II (Prepared): Reinforced Insulation

### Pollution Degree
- Over Voltage Category: OVC II

## EMC Specifications

### EMI Emissions
- Conducted Emissions: EN 55032 class B (internal filter)
- Radiated Emissions: EN 55032 class B (internal filter)
- Harmonic Current Emissions: EN 61000-3-2, class A
- Voltage Fluctuations & Flicker: EN 61000-3-3

### EMS Immunity
- Electrostatic Discharge
  - Air: EN 61000-4-2, ±8 kV, perf. criteria A
  - Contact: EN 61000-4-2, ±4 kV, perf. criteria A
- RF Electromagnetic Field
  - EFT (Burst) / Surge
    - L to L: EN 61000-4-5, ±2 kV, perf. criteria A
    - Continuous: 230 VAC / 50 Hz: EN 61000-4-11
      - 30%, 25 periods, perf. criteria A
      - 60%, 10 periods, perf. criteria B
      - >95%, 0.5 periods, perf. criteria A
      - >95%, 250 periods, perf. criteria B
      - 100%, 1 period, perf. criteria A
      - 100%, 250 periods, perf. criteria B
  - Conducted RF Disturbances
    - 115 VAC / 60 Hz: EN 61000-4-11
      - 30%, 25 periods, perf. criteria A
      - 60%, 10 periods, perf. criteria B
      - >95%, 0.5 periods, perf. criteria A
      - >95%, 250 periods, perf. criteria B
      - 100%, 1 period, perf. criteria A
      - 100%, 250 periods, perf. criteria B
- PF Magnetic Field
- Voltage Dips & Interruptions

### General Specifications

#### Relative Humidity
- 95% max. (non condensing)

#### Temperature Ranges
- Operating Temperature: –40°C to +70°C
- Storage Temperature: –40°C to +85°C

#### Power Derating
- High Temperature: 2.5 %/K above 50°C (High Temperature)
- 2.0 %/K below –30°C (Low Temperature)

#### Cooling System
- Natural convection (20 LFM)

#### Altitude During Operation
- 5'000 m max. (acc. IEC 62368-1)
- 2'000 m max. (acc. IEC 60335-1)

#### Switching Frequency
- 60 - 150 kHz (PWM, FFM)

#### Insulation System
- Reinforced Insulation

#### Working Voltage (rated)
- Input to Output: 60 s
  - 314 VAC
- Isolation Test Voltage
  - 4'000 VAC

All specifications valid at nominal voltage, resistive full load and +25°C after warm-up time, unless otherwise stated.
Leakage Current - Touch Current 250 µA max.
Reliability - Calculated MTBF 450'000 h (MIL-HDBK-217F, ground benign)
Environment - Vibration IEC 60068-2-6
2 g, 3 axis, 60 min, 10-500 Hz, 10 min/cycle
- Mechanical Shock IEC 60068-2-27
Housing Material Plastic resin (UL 94 V-0 rated)
Potting Material Silicone (UL 94 V-0 rated)
Housing Type Plastic Case
Mounting Type Chassis Mount
Connection Type Pin Connector
Weight 60 g
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: 7c-I
(RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (05A rule)).
- SCIP Reference Number 87db2b19-5f6a-45fa-a5ed-0d6c48a2f4d
Supporting Documents
Overview Link (for additional Documents) www.tracopower.com/overview/tmpw5-j

Outline Dimensions

Pinout

<table>
<thead>
<tr>
<th>Pin</th>
<th>Single</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC IN (L)</td>
</tr>
<tr>
<td>2</td>
<td>AC IN (N)</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

Mating Connector:
JST housing: PSIP-03V-LE-A
JST crimp terminals: SPSI-41T-M1.1
            SPSI-001T-M1.1

Dimensions in mm (inch)
Tolerances: x.x ±0.5 (±0.02)
Mounting screw locked torque: 0.29 Nm (3 kgfcm)