TMP60 Series
1-3 Output, 30-60 Watt Medical Power Adapters

**FEATURES**
- Optional On/Off Switch
- Low Safety Ground Leakage Current
- Input Surge Current Protection
- Over-voltage, Over-current & Over-temperature Protections
- Medically Approved to the Latest Safety & EMC Standards
- CEC & Energy Star Level IV Compliance

**INPUT SPECIFICATIONS**

- **Input Voltage Range**: 85-264 VAC
- **Input Frequency**: 47-63 Hz
- **Input Current**: 1.22A rms max. @ 115 VAC, 0.68A rms max. @ 230 VAC
- **Inrush Current**: 50A @ 115 VAC or 100A @ 230 VAC, at 25°C cold start
- **Leakage Current**: 200 µA max. @ 115 VAC, 60Hz

**OUTPUT SPECIFICATIONS**

- **Output Power Ratings**: See rating table
- **Minimum Load**: See rating table
- **Tolerance, Output 1 & 2**: ±5%, except ±3% for 27V-50V
- **Output 3**: ±10%
- **Ripple and Noise**: 2% peak-to-peak max. for 3.3V, 5V, 1% peak-to-peak max. for 12V-48V
- **Overvoltage Protection**: Output 1 only, set at 112-140% of its nominal output voltage
- **Overcurrent Protection**: All outputs are protected to short-circuit conditions
- **Temperature Coefficient**: ±0.04%/°C max.
- **Transient Response**: Max. excursion of 4% or better on all models, recovering to 1% of final value within 500 us after a 25% step load change

* Measured with 20MHz bandwidth at rated line voltage and output load ranges, with a 10µF tantalum capacitor in parallel with a 0.1µF ceramic capacitor in parallel across the output.

**GENERAL SPECIFICATIONS**

- **Switching Frequency**: 40-130KHz
- **Efficiency, Single**: 85% min. @ full load
  - Dual/Triple: 68-74% min. at full load
- **Hold-up Time**: 10ms @ 110 VAC
- **Line Regulation**: ±0.5% max. @ full load
- **Operating Temperature**: 0°C to +60°C
- **Derating**: Derate from 100% at +40°C linearly to 50% at +60°C
- **Storage Temperature**: 40°C to +85°C
- **Relative Humidity**: 5% to 95% non-condensing
- **Withstand Voltage**: 5,600 VAC input-output, 2,100 VAC input-ground, 700 VAC output-ground
- **MTBF**: > 150,000 hours at full load, 25°C ambient, calculated per MIL-HDBK-217F

**STANDARDS & COMPLIANCE**

- IEC/EN 60601-1-2: 2014 ... EMC & Immunity performance
- EN 55011 ....................... Class B, conducted & radiated
- FCC, VCCI ...................... Class B, conducted & radiated
- EN 61000-3-2 ...................... Harmonic distortion, Class A
- EN 61000-3-3 ...................... Line fluctuations & flicker
- EN 61000-4-2 ...................... ESD, ±15 KV air and ±8 KV contact
- EN 61000-4-3 ...................... Radiated immunity, 10 V/m
- EN 61000-4-4 ...................... Fast transient/burst, ±2 KV
- EN 61000-4-5 ...................... Surge, ±1 KV diff., ±2 KV com.
- EN 61000-4-6 ...................... Conducted immunity, 10 Vrms
- EN 61000-4-8 ...................... Magnetic field immunity, 30 A/m
- EN 61000-4-11 ................. Voltage dip immunity, 30% reduction for 500ms, 100% reduction for 10ms

**Safety Standards**

**Agency Approvals**
- UL, cUL, TUV, CE, CB

**Other Compliance**
- RoHS, CEC & Energy Star Level IV

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TMP60Series

1-3 Output, 30-60 Watt Medical Power Adapters

MODELS LIST

<table>
<thead>
<tr>
<th>Product No.</th>
<th>OUTPUT #1</th>
<th>OUTPUT #2</th>
<th>OUTPUT #3</th>
<th>Max. Output Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMP60-Sx</td>
<td>11-13V</td>
<td>0A</td>
<td>5.46A</td>
<td>–</td>
</tr>
<tr>
<td>TMP60-Sx</td>
<td>13-17V</td>
<td>0A</td>
<td>4.62A</td>
<td>–</td>
</tr>
<tr>
<td>TMP60-Sx</td>
<td>17-21V</td>
<td>0A</td>
<td>3.53A</td>
<td>–</td>
</tr>
<tr>
<td>TMP60-Sx</td>
<td>21-27V</td>
<td>0A</td>
<td>2.86A</td>
<td>–</td>
</tr>
<tr>
<td>TMP60-Sx</td>
<td>27-33V</td>
<td>0A</td>
<td>2.23A</td>
<td>–</td>
</tr>
<tr>
<td>TMP60-Sx</td>
<td>33-39V</td>
<td>0A</td>
<td>1.82A</td>
<td>–</td>
</tr>
<tr>
<td>TMP60-Sx</td>
<td>46-50V</td>
<td>0A</td>
<td>1.31A</td>
<td>–</td>
</tr>
<tr>
<td>TMP60-D23</td>
<td>+5V</td>
<td>1A</td>
<td>5.0A</td>
<td>+12V</td>
</tr>
<tr>
<td>TMP60-T30</td>
<td>+3.3V</td>
<td>1A</td>
<td>6.0A</td>
<td>+5V</td>
</tr>
<tr>
<td>TMP60-T31</td>
<td>+5V</td>
<td>1A</td>
<td>5.0A</td>
<td>+12V</td>
</tr>
<tr>
<td>TMP60-T32</td>
<td>+5V</td>
<td>1A</td>
<td>5.0A</td>
<td>+15V</td>
</tr>
<tr>
<td>TMP60-T36</td>
<td>+5V</td>
<td>1A</td>
<td>5.0A</td>
<td>+24V</td>
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</tbody>
</table>

Notes:
1) For single output models, specify the output voltage when ordering, e.g. TMP60-S12 for 12V, TMP60-S19.5 for 19.5V, etc.
2) The output voltages of a multiple output model may go outside of the stated tolerance when an output load current is out of stated limits. All models may be operated at no-load without damage.
3) To order a model with on/off switch, add suffix “S” to the model number, e.g. TMP60-S30-S.

MECHANICAL SPECIFICATIONS

DC OUTPUT CONNECTOR

<table>
<thead>
<tr>
<th>PIN</th>
<th>SINGLE</th>
<th>DUAL</th>
<th>TRIPLE</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>RETURN</td>
<td>COMMON RETURN</td>
<td>COMMON RETURN</td>
</tr>
<tr>
<td>2</td>
<td>RETURN</td>
<td>COMMON RETURN</td>
<td>COMMON RETURN</td>
</tr>
<tr>
<td>3</td>
<td>OUTPUT</td>
<td>OUTPUT #1</td>
<td>OUTPUT #1</td>
</tr>
<tr>
<td>4</td>
<td>RETURN</td>
<td>N.C.</td>
<td>OUTPUT #3</td>
</tr>
<tr>
<td>5</td>
<td>OUTPUT</td>
<td>OUTPUT #2</td>
<td>OUTPUT #2</td>
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<tr>
<td>SHELL</td>
<td>AC GROUND</td>
<td></td>
<td></td>
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</tbody>
</table>

Notes:
1) Dimensions shown in inches (mm)
2) Tolerance 0.02 (0.5) maximum
3) Standard output connector is 5-pin DIN plug, mating with Switchcraft P/N 57GB5F receptacle or equivalent. Contact TRUMPower for output connector options.
4) Weight: 600 grams (1.22 lbs.) approx.
5) Standard model comes with AC and DC Grounds separated. Connected grounds available upon request.