## Input Specifications

| | | | |
|---|---|---|---|
| Input voltage | – nominal | | 100 – 240 VAC |
| | – AC range (universal input) | | 85 – 264 VAC |
| | – DC range | | 120 – 370 VDC |
| Input frequency | – nominal | | 50 / 60 Hz |
| | – range | 4 – 30 W models: | 47 – 440 Hz |
| | | 60 W models: | 47 – 63 Hz |
| Input current at full load | – 115 VAC / 230 VAC input | 4 W models: | 80 mA / 55 mA typ. |
| | | 7 W models: | 150 mA / 100 mA typ. |
| | | 10 W models: | 200 mA / 130 mA typ. |
| | | 15 W models: | 300 mA / 190 mA typ. |
| | | 30 W models: | 550 mA / 330 mA typ. |
| | | 60 W models: | 1050 mA / 670 mA typ. |
| Recommended external input fuse | | 4 W models: | 1.0 A slow blow |
| | | 7 – 15 W models: | 2.0 A slow blow |
| | | 30 W models: | 3.5 A slow blow |
| | | 60 W models: | 6.3 A slow blow |

## Output Specifications

| | | | |
|---|---|---|---|
| Voltage set accuracy | | | ±2 % max. |
| Regulation | – Input variation Output 1 | | 1 % max. |
| | – Input variation Output 2/3 | | 3 % max. |
| | – Load variation | TMPM 04103 model (0–100%): | 1.5 % max. |
| | | single and floating outputs (10–100%): | 1 % max. (0–100% for TMPM 04 models) |
| | | common ground outputs balanced load (10–100%): | 2.5 % max. |
| | | common ground outputs unbalanced load (20/90%): | 5.0 % max. |
| Minimum load | | TMPM 04 single and sym.dual models: | not required |
| | | TMPM 04 asym. dual models: | 25% per output |
| | | single and dual output models: | 10 % of rated max. current |
| | | triple output models main output: | 10 % of rated max. current |
| | | triple output models auxiliary outputs: | 20 % of rated max. current |
| | | | operation at lower load condition will not damage these power supplies, however, they may not meet all listed specifications. |
| Ripple and noise (20MHz bandwidth) | | 3.3 VDC & 5.0 VDC outputs: | 1.8 % of Vout [mVp-p] |
| | | other outputs: | 1.0 % of Vout [mVp-p] |
| Overload protection by current limit | | | 105 % min. of Inom, fold back, automatic recovery (long term overload condition may cause damage to the power supply) |
| Overvoltage protection by Zener diode (main output only) | | | 120 % of Vout typ. |
| Start-up time | | | 400 ms typ. |
| Hold-up time | | | 20 ms typ. |

| Max. capacitive load [µF] | | Model series | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Output: | TMPM 04 | TMP 07 | TMPM 10 | TMP 10 | TMP 15 | TMP 30 | TMP 60 |
| Single output models: | 3.3 VDC | 1200 | 2200 | 2200 | 3900 | - | - | - |
| | 5.0 / 5.1 VDC | 800 | 2200 | 2200 | 3300 | 3900 | 8000 | 8000 |
| | 9.0 VDC | 440 | - | - | - | - | - | - |
| | 12 / 15 VDC | 260 | 1000 | 1000 | 2200 | 2200 | 3900 | 3900 |
| | 24 VDC | 160 | 680 | 680 | 1000 | 1000 | 1500 | 1500 |
| | 36 VDC | - | - | - | - | - | - | 1000 |
| | 48 VDC | - | - | - | - | 680 | 1000 | 800 |
| Dual output models: | 3.3 / 5.0 VDC | 4700 | - | - | - | 2000 | 3900 | - |
| | +12 / –12 / +15 / –15 VDC | 260 | - | - | 1000 | 1500 | 1500 | - |
| Triple output models: | 3.3 / 5.0 VDC | - | - | - | - | 2200 | 2200 | - |
| | +12 / –12 / +15 / –15 VDC | - | - | - | - | 1500 | 1500 | - |

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

## General Specifications

| | | | |
|---|---|---|---|
| Temperature ranges | – Operating | TMPM 04 models: | –25°C to +60°C (no derating) |
| | | TMP 10 models: | –25°C to +50°C (no derating) |
| | | other models: | –25°C to +70°C (with derating) |
| | – Storage (non-operating) | | –40°C to +85°C |
| Power derating | | | 3.3 %/K above +50°C to +65°C<br>5.0 %/K above +65°C to +70°C<br>(no derating approved for TMPM04 and TMP10 models) |
| Over temperature protection | | | at 90°C (automatic recovery at 67°C) |
| Temperature coefficient | | | 0.02 %/K |
| Humidity (non-condensing) | | | 95 % rel. H max. |
| Switching frequency | | | 100 kHz typ. fixed |
| Isolation voltage (60 sec.) | – Input/Output | | 3'000 VAC |
| Isolation resistance | – Input/Output | | 100 MOhm (at 500 VDC) |
| Altitude during operation | | TMP 10, TMPM 04 & 10, : | 2'000 m max. (6'560 ft) approved |
| | | other models: | 3'000 m max. (9'840 ft) approved |
| Electromagnetic compatibility (EMC), Emissions | | | EN 61000-6-3: 2007<br>EN 61204-3: 2000, class A<br>EN 55011, EN 55032, FCC part 15: class B |
| Electromagnetic compatibility (EMC), Immunity | | | EN 61000-6-2: 2005<br>EN 61204-3: 2000, class A |
| | – Electrostatic discharge ESD | | EN 61000-4-2 8 kV / 4 kV, criteria B |
| | – RF field susceptibility | | EN 61000-4-3 10 V/m, criteria A |
| | – Electrical fast transient / burst immunity input | | EN 61000-4-4 ±2 kV, criteria B |
| | – Electrical fast transient / burst immunity output | | EN 61000-4-4 ±2 kV, criteria B |
| | – Surge immunity line – neutral | | EN 61000-4-5, ±1 kV, criteria B |
| | – Surge immunity output | | EN 61000-4-5 ±0.5 kV, criteria B |
| | – Immunity to conducted RF disturbances | | EN 61000-4-6 10 V, criteria B |
| | – Mains voltage dips and interruptions | | EN 61000-4-11 30 % 10 ms, criteria B<br>60 % 100 ms, criteria C<br>95 % 5000 ms, criteria C |
| EMC test certificates | | | www.tracopower.com/overview/tmp |
| Protection class II | | | to IEC/EN 60536 |
| Safety standards | – Information technology equipment | | IEC/EN 60950-1, UL 60950-1 |
| | – Industrial control equipment | | UL/cUL 508 (chassis mount single and symetric dual output models only) |
| Safety approvals | – CB certificate for IEC 60950-1 | | www.tracopower.com/overview/tmp |
| | – UL approvals for UL 60950-1 | | www.ul.com -> certifications -> File: e188913 |
| | – UL approval for UL 508 (chassis mount models only) | | www.ul.com -> certifications -> File: e322109 |
| Reliability /calculated MTBF | | TMP 07, TMPM 04 & 10 models: | >330'000 h |
| (MIL-HDBK-217F, at +25°C, ground benign) | | TMP 10 models: | >300'000 h |
| | | TMP 15 models: | >280'000 h |
| | | TMP 30 models: | >250'000 h |
| | | TMP 60 models: | >125'000 h |
| Casing material | | | plastic resin + fiberglass (UL 94V-0 rated) |
| Environmental compliance | – Reach | | www.tracopower.com/products/reach-declaration.pdf |
| | – RoHS | | RoHS directive 2011/65/EU |

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