

- Fully encapsulated power supplies in plastic casing for PCB mount
- Fully regulated outputs
- 3000 VAC I/O-isolation
- High efficiency up to 89%
- Universal input range 90 to 305 VAC
- Operating temperature range: -40°C to $+70^{\circ}\text{C}$ max.
- Safety class II prepared
- Short circuit over power and over voltage limitation



TMG 30 Series AC/DC power modules come in fully encapsulated plastic package. They are ultra-compact, energy-efficient and cost/performance optimised for prevailing market requirements. The high efficiency and the use of high grade components make these modules suitable for an operating temperature range of -40°C to $+70^{\circ}\text{C}$. Together with very low no-load power consumption they are suitable for applications conforming with the ErP directive. The modules are protected against short-circuit and over voltage. EMI/EMC characteristics and the safety approval package qualify them for demanding applications in equipment for industrial or commercial environments.

| Models | | | | |
|------------|-------------------|---------------------|---------------------|-----------------|
| Order Code | Output Power max. | Output Voltage nom. | Output Current max. | Efficiency typ. |
| TMG 30103 | 16.5 W | 3.3 VDC | 5'000 mA | 80 % |
| TMG 30105 | 25 W | 5 VDC | 5'000 mA | 84 % |
| TMG 30112 | 30 W | 12 VDC | 2'500 mA | 89 % |
| TMG 30115 | | 15 VDC | 2'000 mA | 86 % |
| TMG 30124 | | 24 VDC | 1'250 mA | 86 % |

Input Specifications

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|------------------------|--|--|
| Input Voltage | - AC Range | Operational Range: 90 - 305 VAC (Full Range) Rated Range: 100 - 277 VAC (Full Range) |
| | - DC Range | Operational Range: 120 - 430 VDC (Designed for, no certification) Polarity: irrelevant |
| Input Frequency | | Operational Range: 47 - 440 Hz Certified: 50/60 Hz |
| Input Current | - Full Load & Vin = 230 VAC - Full Load & Vin = 115 VAC | 400 mA max. 600 mA max. |
| Power Consumption | - No load & Vin = 230 VAC - No load & Vin = 115 VAC | 300 mW max. (Ready to meet ErP directive) 300 mW max. |
| Input Inrush Current | - At 230 VAC - At 115 VAC | 60 A max. 30 A max. (For the 7 & 15 W models an external Thermistor has to be integrated in the circuit at the converter input L in series. Thermistor recommendation: 10R / 15z) |
| Recommended Input Fuse | | 3'150 mA (slow blow) (The need of an external fuse has to be assessed in the final application.) |

Output Specifications

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|--|--|---|
| Voltage Set Accuracy | | ±2% max. |
| Regulation | - Input Variation (Vmin - Vmax) - Load Variation (0 - 100%) | 0.5% max. 1.5% max. (3.3 VDC model) 1% max. (other models) |
| Ripple and Noise (20 MHz Bandwidth) | | 3.3 VDC model: 33 mVp-p max. (w/ 0.1 µF 47 µF) 5 VDC model: 120 mVp-p max. (w/ 0.1 µF 47 µF) 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 | | 3.3 VDC model: 6'800 µF max. 5 VDC model: 6'800 µF max. 12 VDC model: 1'600 µF max. 15 VDC model: 1'200 µF max. 24 VDC model: 470 µF max. |
| Minimum Load | | Not required |
| Temperature Coefficient | | ±0.02 %/K max. |
| Hold-up Time | - At 230 VAC - At 115 VAC | 50 ms min. 10 ms min. |
| Start-up Time | - At 230 VAC - At 115 VAC | 250 ms max. 400 ms max. |
| Short Circuit Protection | | Continuous, Automatic recovery |
| Output Current Limitation | | 172 - 268% of Iout max. |
| Overvoltage Protection | | 105 - 145% of Vout nom. (By Zener diode) |
| Transient Response | - Response Deviation - Response Time | 2% max. (75% to 100% Load Step) 500 µs typ. (75% to 100% Load Step) |

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

Safety Specifications

| | | |
|-----------------------|-----------------------------|--|
| Standards | - IT / Multimedia Equipment | EN 60950-1 EN 62368-1 IEC 60950-1 IEC 62368-1 UL 60950-1 UL 62368-1 |
| | - Certification Documents | www.tracopower.com/overview/tmg30 |
| Protection Class | | Class I & II (Prepared): Reinforced Insulation |
| Pollution Degree | | PD 2 |
| Over Voltage Category | | OVC II |

EMC Specifications

| | | |
|---------------|--|---|
| EMI Emissions | - Conducted Emissions - Radiated Emissions | EN 55032 class B (internal filter) EN 55032 class B (internal filter) |
| EMS Immunity | - Electrostatic Discharge - RF Electromagnetic Field - EFT (Burst) / Surge - Conducted RF Disturbances - PF Magnetic Field - Voltage Dips & Interruptions | EN 55024 (IT Equipment) EN 55035 (Multimedia) Air: EN 61000-4-2, ± 8 kV, perf. criteria A Contact: EN 61000-4-2, ± 4 kV, perf. criteria A EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, ± 2 kV, perf. criteria A L to L: EN 61000-4-5, ± 1 kV, perf. criteria A Ext. input component: Use an external Varistor at the converter input (in parallel). Recommendation: 14S471K EN 61000-4-6, 10 Vrms, perf. criteria A Continuous: EN 61000-4-8, 30 A/m, perf. criteria A 230 VAC / 50 Hz: 30%, 25 periods, perf. criteria A >95%, 0.5 periods, perf. criteria A 115 VAC / 60 Hz: 30%, 25 periods, perf. criteria A >95%, 0.5 periods, perf. criteria A |

General Specifications

| | | |
|------------------------------|--|--|
| Relative Humidity | | 95% max. (non condensing) |
| Temperature Ranges | - Operating Temperature - Storage Temperature | -40°C to +70°C -40°C to +85°C |
| Power Derating | - High Temperature - Low Input Voltage | 3 %/K above 50°C (nominal input models) 3 %/K above 45°C (<115 VAC models) 2 %/V below 100 VAC |
| | | See application note: www.tracopower.com/overview/tmg30 |
| Cooling System | | Natural convection (20 LFM) |
| Altitude During Operation | | 2'000 m max. |
| Switching Frequency | | 40 - 73 kHz (PWM) |
| Insulation System | | Reinforced Insulation |
| Working Voltage (rated) | | 341 VAC |
| Isolation Test Voltage | - Input to Output, 60 s | 3'000 VAC |
| Creepage | - Input to Output | 5.6 mm min. |
| Clearance | - Input to Output | 4 mm min. |
| Leakage Current (at 240 VAC) | - Earth Leakage Current | 250 μ A max. |
| Reliability | - Calculated MTBF | 400'000 h (MIL-HDBK-217F, ground benign) |
| Washing Process | | Not allowed |
| Housing Material | | Plastic resin (UL 94 V-0 rated) |
| Potting Material | | Silicone (UL 94 V-0 rated) (Hermetical sealed structure, dust-proof only non water-proof) |
| Pin Material | | Brass |
| Pin Surface Plating | | Tin (120 μ m min.), matte |

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

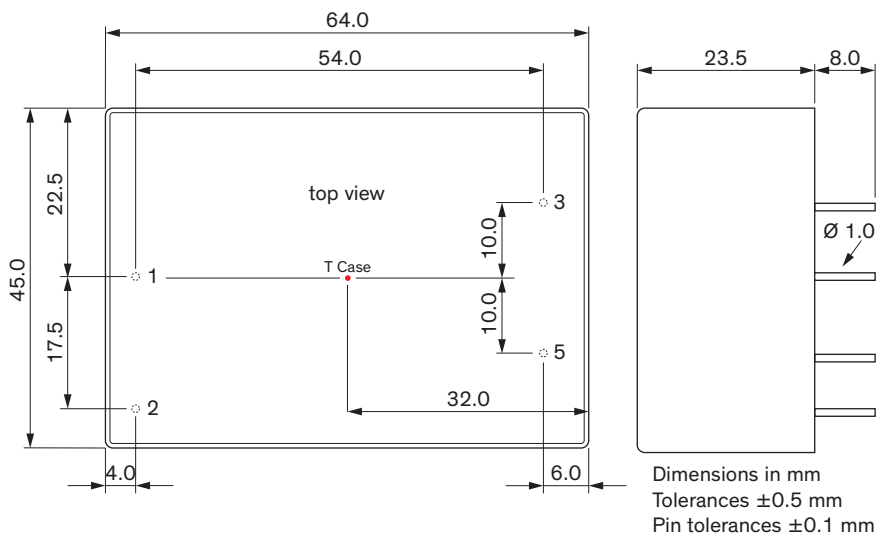
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|--------------------------|--|
| Housing Type | Plastic Case |
| Mounting Type | PCB Mount |
| Connection Type | THD (Through-Hole Device) |
| Soldering Profile | Lead-Free Wave Soldering 270°C / 3 s max. |
| Weight | 130 g |
| Environmental Compliance | - 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 (O5A rule)) - SCIP Reference Number bd8f0732-7589-4d2d-8638-9f86263dcf68 |

Supporting Documents

Overview Link (for additional Documents)

www.tracopower.com/overview/tmg30

Outline Dimensions



| Pinout | |
|--------|-----------|
| Pin | Function |
| 1 | AC IN (N) |
| 2 | AC IN (L) |
| 3 | -Vout |
| 5 | +Vout |