

- 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
- 3-year product warranty



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

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
Power Consumption	- No load & Vin = 230 VAC	300 mW max. (Ready to meet ErP directive)
	- No load & Vin = 115 VAC	300 mW max.
Input Current	- Full load & Vin = 230 VAC	400 mA max.
	- Full load & Vin = 115 VAC	600 mA max.
Input Inrush Current	- At 230 VAC	60 A max.
	- At 115 VAC	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

Voltage Set Accuracy		±2% max.
Regulation	- Input Variation (Vmin - Vmax)	0.5% max.
	- Load Variation (0 - 100%)	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	50 ms min.
	- At 115 VAC	10 ms min.
Start-up Time	- At 230 VAC	250 ms max.
	- At 115 VAC	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	2% max. (75% to 100% Load Step)
	- Response Time	500 µs typ. (75% to 100% Load Step)

All specifications valid at 230 VAC, 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	See application note:	Class I & II (Prepared): Reinforced Insulation www.tracopower.com/info/protection-class.pdf
Pollution Degree		PD 2
Over Voltage Category		OVC II

EMC Specifications

EMI (Emissions)	- Conducted Emissions	EN 55032 class A (internal filter) EN 55032 class B (internal filter)
	- Radiated Emissions	EN 55032 class A (internal filter) EN 55032 class B (internal filter)
EMS (Immunity)		EN 55024 (IT Equipment) EN 55035 (Multimedia)
	- 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	EN 61000-4-3, 10 V/m, perf. criteria A
	- EFT (Burst) / Surge	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
	- Conducted RF Disturbances	EN 61000-4-6, 10 Vrms, perf. criteria A
	- PF Magnetic Field	Continuous: EN 61000-4-8, 30 A/m, perf. criteria A
	- Voltage Dips & Interruptions	230 VAC / 50 Hz: EN 61000-4-11 30%, 25 periods, perf. criteria A >95%, 0.5 periods, perf. criteria A 115 VAC / 60 Hz: EN 61000-4-11 30%, 25 periods, perf. criteria A >95%, 0.5 periods, perf. criteria A
EMC / Environmental	- Certification Documents	www.tracopower.com/overview/tmg30

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	3 %/K above 50°C (nominal input models) 3 %/K above 45°C (<115 VAC models) 2 %/V below 100 VAC
	- Low Input Voltage	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)

All specifications valid at 230 VAC, resistive full load and +25°C after warm-up time, unless otherwise stated.

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 µm min.), matte
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 www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7(c)-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (Q5A rule)) - RoHS Declaration - SCIP Reference Number

Additional Information	
Supporting Documents	www.tracopower.com/overview/tmg30
Frequently Asked Questions	www.tracopower.com/glossary-faq
Glossary	www.tracopower.com/info/glossary.pdf

Outline Dimensions

