

- 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°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°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: <b>90 - 305 VAC</b> (Full Range) Rated Range: <b>100 - 277 VAC</b> (Full Range)
	- DC Range	Operational Range: <b>120 - 430 VDC</b> (Designed for, no certification) Polarity: <b>irrelevant</b>
Input Frequency		Operational Range: <b>47 - 440 Hz</b> Certified: <b>50/60 Hz</b>
Power Consumption	- No load & Vin = 230 VAC - No load & Vin = 115 VAC	<b>300 mW max.</b> (Ready to meet ErP directive) <b>300 mW max.</b>
Input Current	- Full load & Vin = 230 VAC - Full load & Vin = 115 VAC	<b>400 mA max.</b> <b>600 mA max.</b>
Input Inrush Current	- At 230 VAC - At 115 VAC	<b>60 A max.</b> <b>30 A max.</b> (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		<b>3'150 mA</b> (slow blow) (The need of an external fuse has to be assessed in the final application.)

### Output Specifications

Voltage Set Accuracy		<b>±2% max.</b>
Regulation	- Input Variation (Vmin - Vmax) - Load Variation (0 - 100%)	<b>0.5% max.</b> <b>1.5% max.</b> (3.3 VDC model) <b>1% max.</b> (other models)
Ripple and Noise (20 MHz Bandwidth)		3.3 VDC model: <b>33 mVp-p max.</b> (w/ 0.1 µF    47 µF) 5 VDC model: <b>120 mVp-p max.</b> (w/ 0.1 µF    47 µF) 12 VDC model: <b>120 mVp-p max.</b> (w/ 0.1 µF    47 µF) 15 VDC model: <b>150 mVp-p max.</b> (w/ 0.1 µF    47 µF) 24 VDC model: <b>240 mVp-p max.</b> (w/ 0.1 µF    47 µF)
Capacitive Load		3.3 VDC model: <b>6'800 µF max.</b> 5 VDC model: <b>6'800 µF max.</b> 12 VDC model: <b>1'600 µF max.</b> 15 VDC model: <b>1'200 µF max.</b> 24 VDC model: <b>470 µF max.</b>
Minimum Load		<b>Not required</b>
Temperature Coefficient		<b>±0.02 %/K max.</b>
Hold-up Time	- At 230 VAC - At 115 VAC	<b>50 ms min.</b> <b>10 ms min.</b>
Start-up Time	- At 230 VAC - At 115 VAC	<b>250 ms max.</b> <b>400 ms max.</b>
Short Circuit Protection		<b>Continuous, Automatic recovery</b>
Output Current Limitation		<b>172 - 268% of Iout max.</b>
Overvoltage Protection		<b>105 - 145% of Vout nom.</b> (By Zener diode)
Transient Response	- Response Deviation - Response Time	<b>2% max.</b> (75% to 100% Load Step) <b>500 µs typ.</b> (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	<a href="http://www.tracopower.com/overview/tmg30">www.tracopower.com/overview/tmg30</a>
Protection Class		Class I & II (Prepared): Reinforced Insulation
Pollution Degree		PD 2
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)
EMS (Immunity)		EN 55024 (IT Equipment) EN 55035 (Multimedia)
	- Electrostatic Discharge	Air: EN 61000-4-2, $\pm 8$ kV, perf. criteria A Contact: EN 61000-4-2, $\pm 4$ kV, perf. criteria A EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, $\pm 2$ kV, perf. criteria A L to L: EN 61000-4-5, $\pm 1$ kV, perf. criteria A
	- RF Electromagnetic Field	Ext. input component: Use an external Varistor at the converter input (in parallel). Recommendation: 14S471K EN 61000-4-6, 10 Vrms, perf. criteria A
	- EFT (Burst) / Surge	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
	- Conducted RF Disturbances	
	- PF Magnetic Field	
	- Voltage Dips & Interruptions	
EMC / Environmental	- Certification Documents	<a href="http://www.tracopower.com/overview/tmg30">www.tracopower.com/overview/tmg30</a>

### 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: <a href="http://www.tracopower.com/overview/tmg30">www.tracopower.com/overview/tmg30</a>
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 $\mu$ 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

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

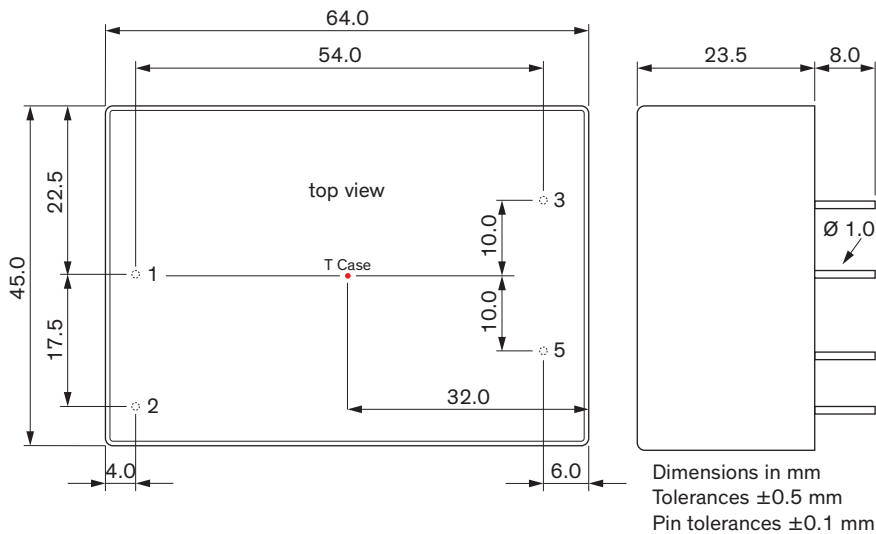
Pin Surface Plating	Tin (120 µm min.), matte
Housing Type	Plastic Case
Mounting Type	PCB Mount
Connection Type	THD (Through-Hole Device)
Soldering Profile	Lead-Free Wave Soldering 270°C / 3 s max.
Weight	130 g
Environmental Compliance	- REACH Declaration <a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a> REACH SVHC list compliant REACH Annex XVII compliant - RoHS Declaration <a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a> 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](http://www.tracopower.com/overview/tmg30)

### Outline Dimensions



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