

- Fully encapsulated power supplies in plastic casing for PCB mount
- Fully regulated outputs
- 3000 VAC I/O-isolation
- High efficiency up to 90%
- Universal input range 90 to 264 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 50 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 $+70^{\circ}\text{C}$. 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	Output Voltage		Efficiency
	max.	nom.	max.	
TMG 50105	40 W	5 VDC	8'000 mA	86 %
TMG 50112		12 VDC	4'167 mA	90 %
TMG 50115	50 W	15 VDC	3'333 mA	87 %
TMG 50124		24 VDC	2'083 mA	88 %
TMG 50148		48 VDC	1'040 mA	89 %

Input Specifications

Input Voltage	- AC Range	Operational Range: 90 - 264 VAC (Full Range) Rated Range: 100 - 240 VAC (Full Range)
	- DC Range	Operational Range: 120 - 370 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	600 mA max. 1'000 mA max.
Power Consumption	- No load & Vin = 230 VAC - No load & Vin = 115 VAC	1'000 mW max. 1'000 mW max.
Input Inrush Current	- At 230 VAC - At 115 VAC	60 A max. 40 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) - Load Variation (0 - 100%)	1% max. 1% max.
Ripple and Noise (20 MHz Bandwidth)		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) 48 VDC model: 480 mVp-p max. (w/ 0.1 µF 47 µF)
Capacitive Load		5 VDC model: 10'000 µF max. 12 VDC model: 3'500 µF max. 15 VDC model: 3'000 µF max. 24 VDC model: 2'200 µF max. 48 VDC model: 330 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		200 - 258% of Iout max.
Oversvoltage 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

Safety 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/tmg50
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	3.75 %/K above 50°C 2 %/V below 100 VAC
		See application note: www.tracopower.com/overview/tmg50
Cooling System		Natural convection (20 LFM)
Altitude During Operation		2'000 m max.
Switching Frequency		60 - 70 kHz (PWM)
Insulation System		Reinforced Insulation
Working Voltage (rated)		310 VAC
Isolation Test Voltage	- Input to Output, 60 s	3'000 VAC
Creepage	- Input to Output	4.8 mm min.
Clearance	- Input to Output	4 mm min.
Leakage Current (at 240 VAC)	- Earth Leakage Current	250 μ A max.
Reliability	- Calculated MTBF	300'000 h (MIL-HDBK-21 7F, 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
Housing Type		Plastic Case

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

Mounting Type	PCB Mount
Connection Type	THD (Through-Hole Device)
Weight	166 g
Environmental Compliance	www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7a, 7c-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule). The SCIP number is provided on request.)
	- REACH Declaration
	- RoHS Declaration

Supporting Documents

Overview Link (for additional Documents)

www.tracopower.com/overview/tmg50

Outline Dimensions

