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TRACO POWER

AC/DC Power Supply

TMG 50 Series, 50 Watt

- **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°C max.**
- **Safety class II prepared**
- **Short circuit over power and over voltage limitation**



prepared

UL 62368-1 IEC 62368-1

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°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 max.	Output Voltage nom.	Output Current max.	Efficiency typ.
TMG 50105	40 W	5 VDC	8'000 mA	86 %
TMG 50112	50 W	12 VDC	4'167 mA	90 %
TMG 50115		15 VDC	3'333 mA	87 %
TMG 50124		24 VDC	2'083 mA	88 %
TMG 50148		48 VDC	1'040 mA	89 %

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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		600 mA max.
	- Full Load & Vin = 115 VAC		1'000 mA max.
Power Consumption	- No load & Vin = 230 VAC		1'000 mW max.
	- No load & Vin = 115 VAC		1'000 mW max.
Input Inrush Current	- At 230 VAC		60 A max.
	- At 115 VAC		40 A max. (For the 7 & 15 W models an external Thermistor has to be integreated 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)		1% max.
	- Load Variation (0 - 100%)		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		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			200 - 258% 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 nominal voltage, resistive full load and +25°C after warm-up time, unless otherwise stated.

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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		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, ±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:	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	–40°C to +70°C
	- Storage Temperature	–40°C to +85°C
Power Derating	- High Temperature	3.75 %/K above 50°C
	- Low Input Voltage	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 µA max.
Reliability	- Calculated MTBF	300'000 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 µm 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.

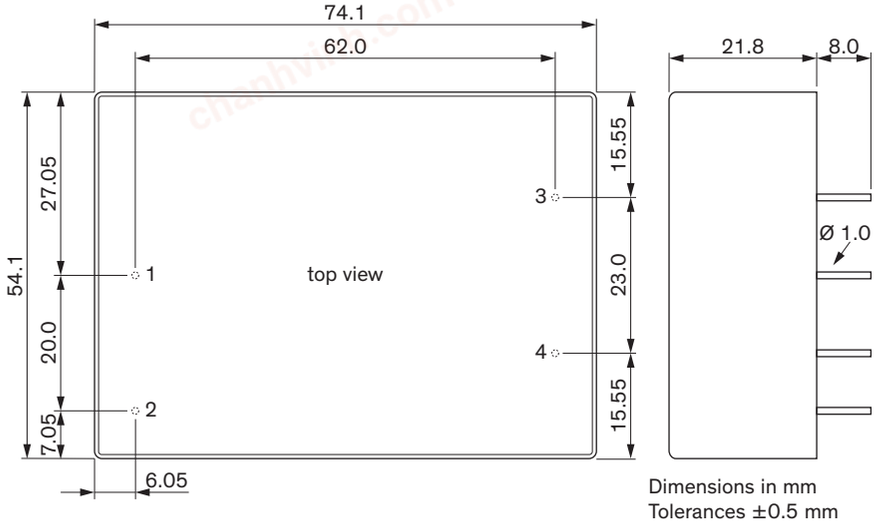
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Mounting Type		PCB Mount
Connection Type		THD (Through-Hole Device)
Weight		166 g
Environmental Compliance	- REACH Declaration	www.tracopower.com/info/reach-declaration.pdf
		REACH SVHC list compliant REACH Annex XVII compliant
	- RoHS Declaration	www.tracopower.com/info/rohs-declaration.pdf
		Exemptions: 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.)

Supporting Documents

Overview Link (for additional Documents)	www.tracopower.com/overview/tmg50

Outline Dimensions



Dimensions in mm
Tolerances ±0.5 mm
Pin tolerances ±0.1 mm

Pinout	
Pin	**Function**
1	AC IN (N)
2	AC IN (L)
3	–Vout
4	+Vout

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