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TRACO POWER

AC/DC Power Supply

TMG 15 Series, 15 Watt

- **Fully encapsulated power supplies in plastic casing for PCB mount**
- **Fully regulated outputs**
- **4000 VAC I/O-isolation**
- **High efficiency up to 85%**
- **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**



UL 62368-1 IEC 62368-1

TMG 15 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 15105	13.5 W	5 VDC	2'700 mA	80 %
TMG 15112	15 W	12 VDC	1'250 mA	84 %
TMG 15115		15 VDC	1'000 mA	84 %
TMG 15124		24 VDC	625 mA	85 %

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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:	+DC: N / –DC: L
Input Frequency		Operational Range:	47 - 440 Hz
		Certified:	50/60 Hz
Input Current	- Full Load & Vin = 230 VAC		220 mA max.
	- Full Load & Vin = 115 VAC		340 mA max.
Power Consumption	- No load & Vin = 230 VAC		100 mW max. (Ready to meet ErP directive)
	- No load & Vin = 115 VAC		100 mW max.
Input Inrush Current	- At 230 VAC		45 A max.
	- At 115 VAC		25 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			2'000 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 (10 - 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)
Capacitive Load		5 VDC model:	7'000 µF max.
		12 VDC model:	1'500 µF max.
		15 VDC model:	1'000 µF max.
		24 VDC model:	470 µF max.
Minimum Load			Not required
Temperature Coefficient			±0.05 %/K max.
Hold-up Time	- At 230 VAC		35 ms min.
	- At 115 VAC		4 ms min.
Start-up Time	- At 230 VAC		100 ms max.
	- At 115 VAC		120 ms max.
Short Circuit Protection			Continuous, Automatic recovery
Output Current Limitation			164 - 228% 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)

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/tmg15
Protection Class		Class I & II (Prepared): Reinforced Insulation

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

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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 %/K above 50°C (12-24 VDC models) 2.2 %/K above 40°C (5 VDC model or <115 VAC input)
	- Low Input Voltage		2 %/V below 100 VAC
		See application note:	www.tracopower.com/overview/tmg15
Cooling System			Natural convection (20 LFM)
Altitude During Operation			2'000 m max.
Switching Frequency			40 - 140 kHz (PWM)
Insulation System			Reinforced Insulation
Working Voltage (rated)			256 VAC
Isolation Test Voltage	- Input to Output, 60 s		4'000 VAC
Creepage	- Input to Output		5 mm min.
Clearance	- Input to Output		4 mm min.
Leakage Current (at 240 VAC)	- Earth Leakage Current		250 µA max.
Reliability	- Calculated MTBF		450'000 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
Mounting Type			PCB Mount
Connection Type			THD (Through-Hole Device)
Weight			40 g

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

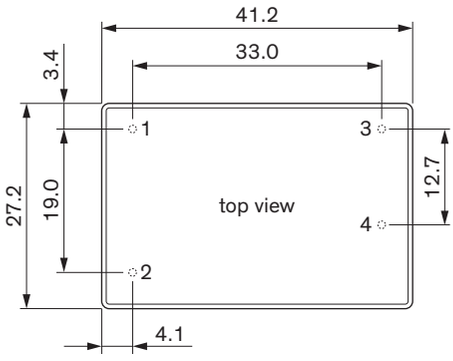
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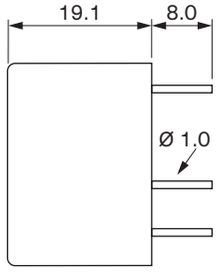
Environmental Compliance	- REACH Declaration	www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant
	- RoHS Declaration	www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7c-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule). The SCIP number is provided on request.)

Supporting Documents

Overview Link (for additional Documents)	www.tracopower.com/overview/tmg15

Outline Dimensions





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

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

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