

- 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 $+70^{\circ}\text{C}$ 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 $+70^{\circ}\text{C}$. 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 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 %

Input Specifications

Input Voltage	- AC Range	90 - 264 VAC (Full Range)
	- DC Range	120 - 370 VDC (Designed for, no certification) (DC+: N / DC-: L)
Input Frequency		47 - 63 Hz
Input Current	- Full Load & Vin = 230 VAC	220 mA max.
	- Full Load & Vin = 115 VAC	340 mA max.
Power Consumption	- At no load	100 mW max. (Ready to meet ErP directive)
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 integrated 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
Pollution Degree		PD 2
Over Voltage Category		OVC II

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

EMC Specifications

EMI Emissions	- Conducted Emissions	EN 55032 class B (internal filter)
	- Radiated Emissions	EN 55032 class B (internal filter)
EMS Immunity	- Electrostatic Discharge	EN 55024 (IT Equipment)
		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
		EN 61000-4-4, ± 2 kV, perf. criteria A
	- EFT (Burst) / Surge	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 - PF Magnetic Field - Voltage Dips & Interruptions	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
		115 VAC / 60 Hz: 30%, 25 periods, perf. criteria A
		>95%, 0.5 periods, perf. criteria A

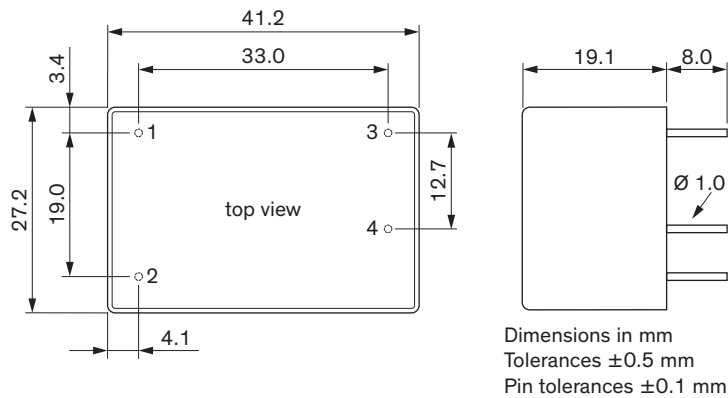
General Specifications

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
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 μ A max.
Reliability	- Calculated MTBF	450'000 h (MIL-HDBK-217F, ground benign)
Housing Material		Plastic resin (UL 94 V-0 rated)
Pin Material		Brass
Pin Surface Plating		Tin (120 μ m min.), matte
Connection Type		THD (Through-Hole Device)
Weight		40 g
Environmental Compliance	- REACH Declaration	www.tracopower.com/info/reach-declaration.pdf
	- RoHS Declaration	REACH SVHC list compliant REACH Annex XVII compliant www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7c-I

Supporting Documents

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


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