

- 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
- 3-year product warranty



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	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
Power Consumption	- No load & Vin = 230 VAC	100 mW max. (Ready to meet ErP directive)
	- No load & Vin = 115 VAC	100 mW max.
Input Current	- Full load & Vin = 230 VAC	220 mA max.
	- Full load & Vin = 115 VAC	340 mA 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 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

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 230 VAC, resistive full load and +25°C after warm-up time, unless otherwise stated.

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: EN 61000-4-11
		30%, 25 periods, perf. criteria A
		>95%, 0.5 periods, perf. criteria A
		115 VAC / 60 Hz: EN 61000-4-11
		30%, 25 periods, perf. criteria A
		>95%, 0.5 periods, perf. criteria A
EMC / Environmental	- Certification Documents	www.tracopower.com/overview/tmg15

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 μ A 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 μ m 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.

All specifications valid at 230 VAC, resistive full load and +25°C after warm-up time, unless otherwise stated.

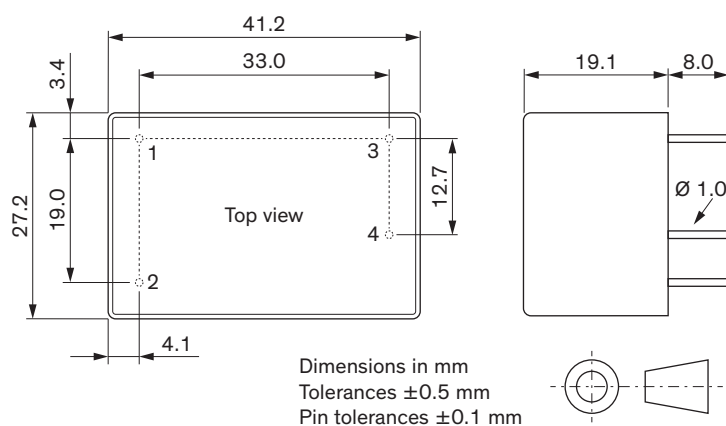
Weight	40 g
Environmental Compliance	- REACH Declaration - RoHS Declaration - SCIP Reference Number
	www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7(c)-I (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).) 35f721ef-90e6-4e9d-9e63-bc740c1e40f3

Supporting Documents

Overview Link (for additional Documents)

www.tracopower.com/overview/tmg15

Outline Dimensions



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