Encapsulated Power Supply

TML Series 5 – 30 Watt

Features

- Switching Power Modules for PCB Mounting
- Fully encapsulated Plastic Case
- Single, Dual and Triple Output Models
- Universal Input 85-264 VAC, 47 - 440 Hz
- High Efficiency
- EMI meets EN 55022, Class B and FCC, Level B
- Low Ripple and Noise
- Short Circuit and Overload Protection
- Safety Class II Product (30 Watt Models)
- 2 Year Product Warranty

The TML Series switching power supplies, offer high power density in a fully encapsulated module. This feature makes these modules an ideal solution for all space critical applications in commercial and industrial electronic equipment. Full compliance to European low voltage and EMC directive, UL and cUL safety approval qualifies this product for worldwide markets. SMD-technology and a high efficiency guarantees a high reliability of these Power Supplies.

Models

OrderCode	Output Power max.	Output 1 Inom	Output 2 Inom	Output 3 Inom
TML 05105		5 VDC / 1000 mA		
TML 05112		12 VDC / 416 mA		
TML 05115		15 VDC / 333 mA		
TML 05124	5 Watt	24 VDC / 200 mA		
TML 05205		5 VDC / 500 mA	–5 VDC / 500 mA	
TML 05212		12 VDC / 200 mA	–12 VDC / 200 mA	
TML 05215		15 VDC / 160 mA	–15 VDC / 160 mA	
TML 10105		5 VDC / 2000 mA		
TML 10112		12 VDC / 833 mA		
TML 10115		15 VDC / 666 mA		
TML 10124	10 Watt	24 VDC / 416 mA		
TML 10205		5 VDC / 800 mA	–5 VDC / 800 mA	
TML 10212		12 VDC / 380 mA	–12 VDC / 380 mA	
TML 10215		15 VDC / 300 mA	–15 VDC / 300 mA	

Models

OrderCode	Output Power max.	Output 1 Inom	Output 2 Inom	Output 3 Inom
TML 15105		5 VDC / 3000 mA		
TML 15112		12 VDC / 1250 mA		
TML 15115		15 VDC / 1000 mA		
TML 15124		24 VDC / 625 mA		
TML 15205	15 Watt	5 VDC / 1500 mA	–5 VDC / 1500 mA	
TML 15212		12 VDC / 650 mA	–12 VDC / 650 mA	
TML 15215		15 VDC / 500 mA	–15 VDC / 500 mA	
TML 15512		5 VDC / 2000 mA	12 VDC / 200 mA	–12 VDC / 200 mA
TML 15515		5 VDC / 2000 mA	15 VDC / 150 mA	–15 VDC / 150 mA
TML 30103		3.3 VDC / 6000 mA		
TML 30105		5 VDC / 6000 mA		
TML 30112		12 VDC / 2500 mA		
TML 30115		15 VDC / 2000 mA		
TML 30124		24 VDC / 1250 mA		
TML 30205	30 Watt	5 VDC / 3000 mA	–5 VDC / 3000 mA	
TML 30212		12 VDC / 1300 mA	–12 VDC / 1300 mA	
TML 30215		15 VDC / 1000 mA	–15 VDC / 1000 mA	
TML 30252		* 5 VDC / 3000 mA	* 12 VDC / 1250 mA	
TML 30512		* 5 VDC / 3000 mA	12 VDC / 630 mA	–12 VDC / 630 mA
TML 30515		* 5 VDC / 3000 mA	15 VDC / 500 mA	–15 VDC / 500 mA

* Output floating

Input Specifications

Input voltage range		85 – 264 VAC
Input frequency		47 – 440 Hz
Input current no load		115 VAC / 230 VAC
	– TML 5 models	10 mA / 15 mA typ.
	– TML 10 models	15 mA / 20 mA typ
	– TML 15 models	18 mA / 25 mA typ.
	– TML 30 models	30 mA / 55 mA typ.
Input current full load		115 VAC / 230 VAC
	– TML 5 models	160 mA / 80 mA typ.
	– TML 10 models	200 mA / 120 mA typ
	– TML 15 models	280 mA / 165 mA typ.
	– TML 30 models	550 mA / 320 mA typ.
Inrush current (< 2 ms)		115 VAC / 230 VAC
		10 A max / 20 A max
External fuse (recommended)		1.5 A slow blow type

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

Output Specifications

Voltage set accuracy		± 2 %
Regulation	– Input variation	± 0.3 % max.
	– Load variation (10 – 100%)	
	– Single output models	± 1.0 % max.
	– Dual / triple output models	± 5 % max.
Minimum load (only triple output models)		10 % (main output)
Ripple and noise (20 MHz Bandwidth)	– 3.3 & 5 VDC output models:	< 1.5 % of Vout
	– other models:	< 1.0 % of Vout
Current limitation		120 – 180 % fold back
Short circuit protection		hiccup mode, indefinite (automatic recovery)
Maximum capacitive load		470 – 50'000 µF depending on model

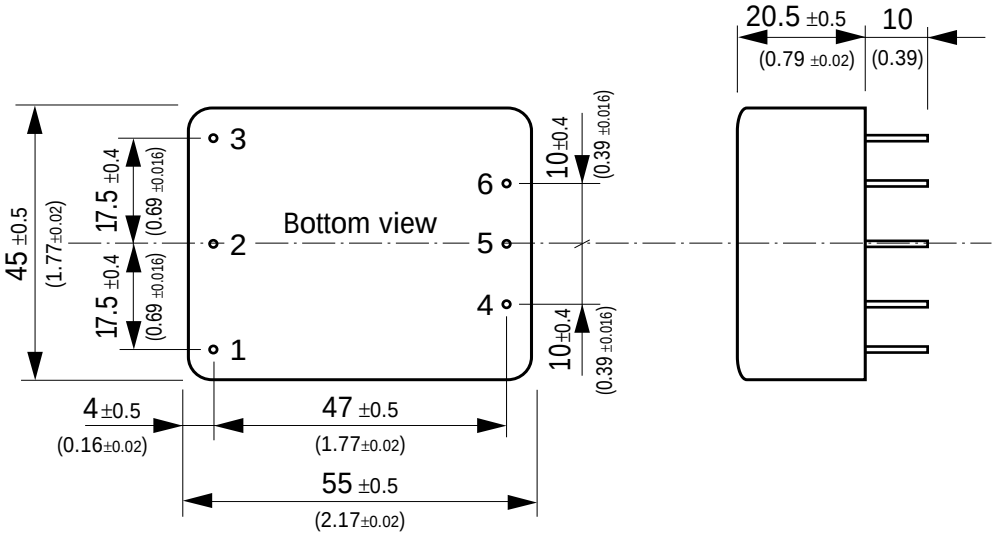
General Specifications

Temperature ranges	– Operating	– 25 °C…+71 °C ambient temp. max.
	– Power derating above 50°C	3.75 %/°C
	– Storage (non operating)	– 40 °C…+85 °C
Temperature coefficient		0.02 % / °C
Efficiency		72 – 80 % (depending on model)
Humidity (non condensing)		95 % rel max.
Switching frequency		100 kHz typ. (Puls width modulation PWM)
Hold-up time		40 ms min. (Vin 115…230 VAC)
Isolation voltage	– Input / Output	3'000 VAC
Reliability / calculated MTBF (MIL-HDBK-217E)		> 660'000 h @ 25°C
EMI / RFI conducted		EN 55022, class B, FCC part 15, level B
EMC compliance	– Electrostatic discharge ESD	IEC / EN 61000-4-2 level 2 4 kV / 8 kV
	– RF field susceptibility	IEC / EN 61000-4-3 level 4 3 V/m
	– Electrical fast transients / bursts on mainsline	IEC / EN 61000-4-4 level 4 1 kV
Safety Class II (only 30 watt models)		to IEC / EN 60536
Safety standards		UL 1950, IEC 60950, EN 60950
Safety approval		cUL / UL File E188913
Case material		Plastic resin + Fiberglass (flammability to UL 94-V0)

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

Outline Dimensions mm (inches)

TML 05xxx



Pin diameter ø 1.0 mm

Weight: 80 g (2.8 oz)

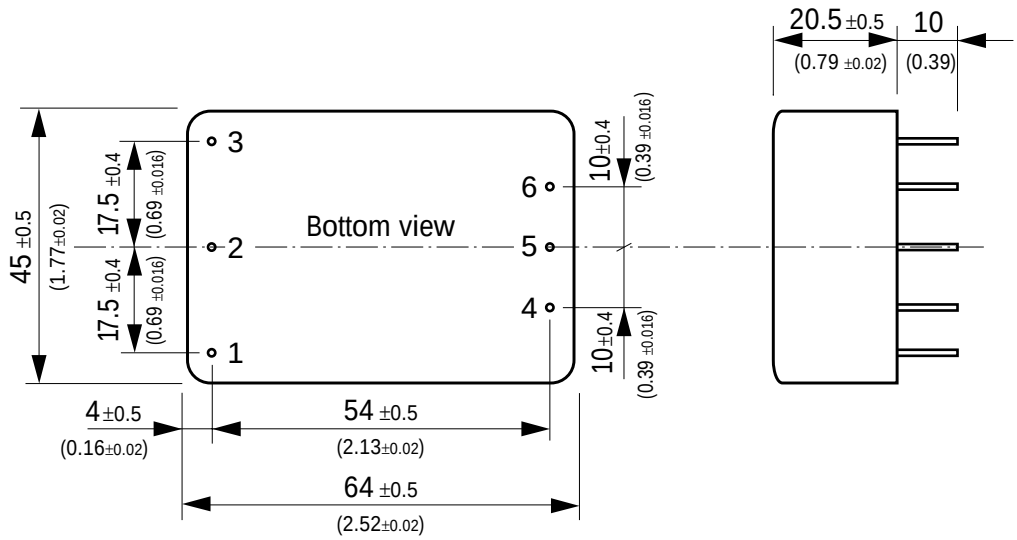
Pin-Out

Pin	Single	Dual
1	FG	FG
2	AC in	AC in
3	AC in	AC in
4	–V out	–V out
5	NC	Common
6	+V out	+V out

Specifications can be changed without notice

Outline Dimensions mm (inches)

TML 10xxx



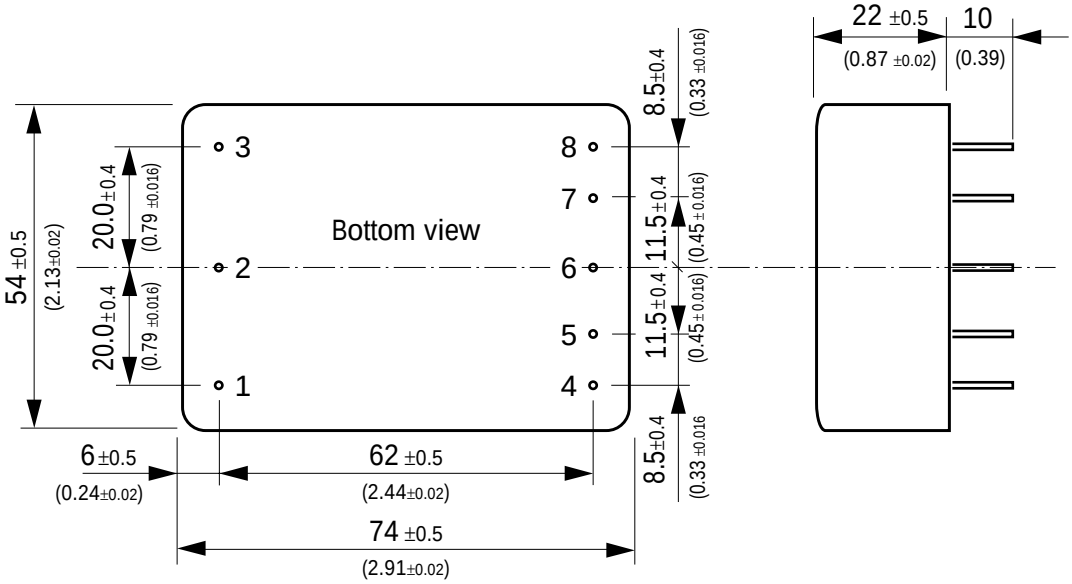
Pin diameter ø 1.0 mm

Weight: 100 g (3.5 oz)

Pin-Out		
Pin	**Single**	**Dual**
1	FG	FG
2	AC in	AC in
3	AC in	AC in
4	–V out	–V out
5	NC	Common
6	+V out	+V out

Outline Dimensions mm (inches)

TML 15xxx



Pin diameter ø 1.0 mm

Weight: 140 g (4.9 oz)

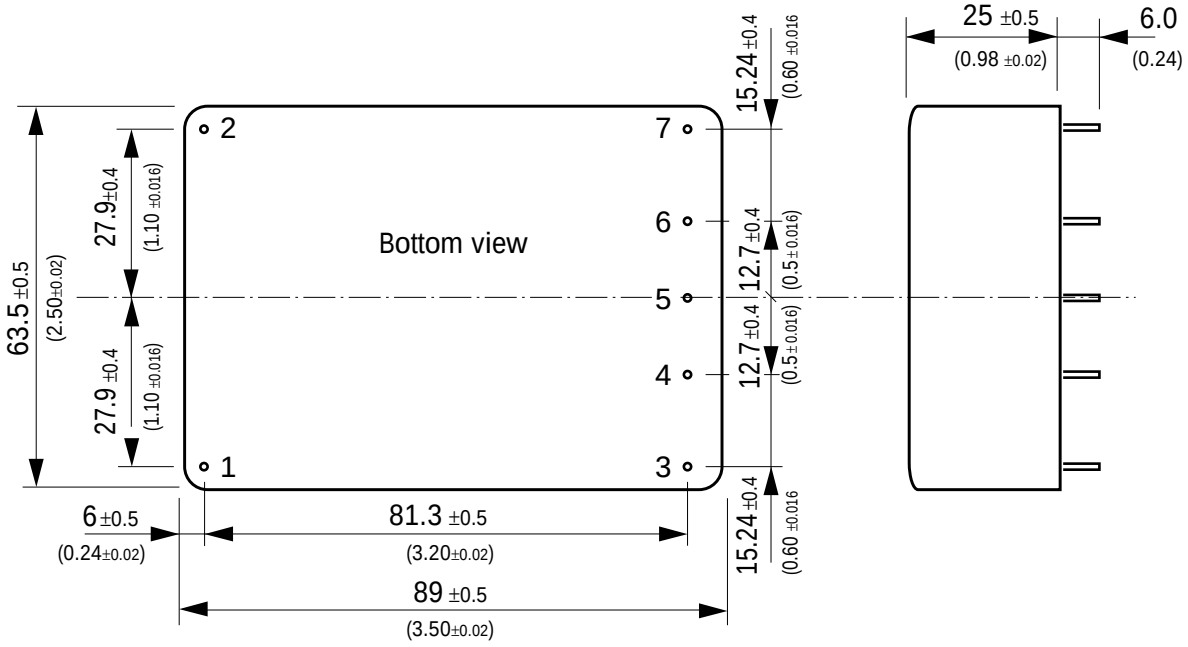
Pin-Out

Pin	Single	Dual	Triple
1	FG	FG	FG
2	AC in	AC in	AC in
3	AC in	AC in	AC in
4	No Pin	No Pin	–V out 3
5	–V out	–V out	Com. 2 / 3
6	No Pin	Common	+V out 2
7	+V out	+V out	–V out 1
8	No Pin	No Pin	+V out 1

Specifications can be changed without notice

Outline Dimensions mm (inches)

TML 30xxx



Pin diameter ø 1.0mm

Weight : 180 g (6.3 oz)

Pin-Out				
Pin	**Single**	**Dual sym.**	**Dual asym.**	**Triple**
1	AC in	AC in	AC in	AC in
2	AC in	AC in	AC in	AC in
3	+V out	+V out	+V out 1	+V out 2
4	No Pin	No Pin	No Pin	+V out 1
5	–V out	Common	– V out 2	Com. 2 / 3
6	No Pin	No Pin	– V out 1	–V out 1
7	No Pin	–V out	+V out 2	–V out 3

Specifications can be changed without notice

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