

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 TML 05112 TML 05115 TML 05124 TML 05205 TML 05212 TML 05215	5 Watt	5 VDC / 1000 mA 12 VDC / 416 mA 15 VDC / 333 mA 24 VDC / 200 mA 5 VDC / 500 mA 12 VDC / 200 mA 15 VDC / 160 mA	-5 VDC / 500 mA -12 VDC / 200 mA -15 VDC / 160 mA	
TML 10105 TML 10112 TML 10115 TML 10124 TML 10205 TML 10212 TML 10215	10 Watt	5 VDC / 2000 mA 12 VDC / 833 mA 15 VDC / 666 mA 24 VDC / 416 mA 5 VDC / 800 mA 12 VDC / 380 mA 15 VDC / 300 mA	-5 VDC / 800 mA -12 VDC / 380 mA -15 VDC / 300 mA	

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

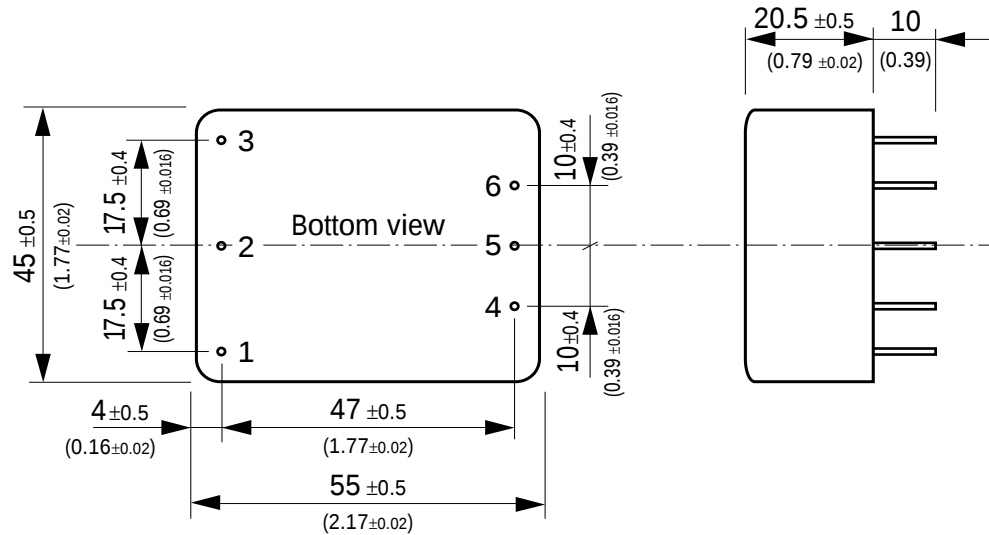
Output Specifications

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

General Specifications

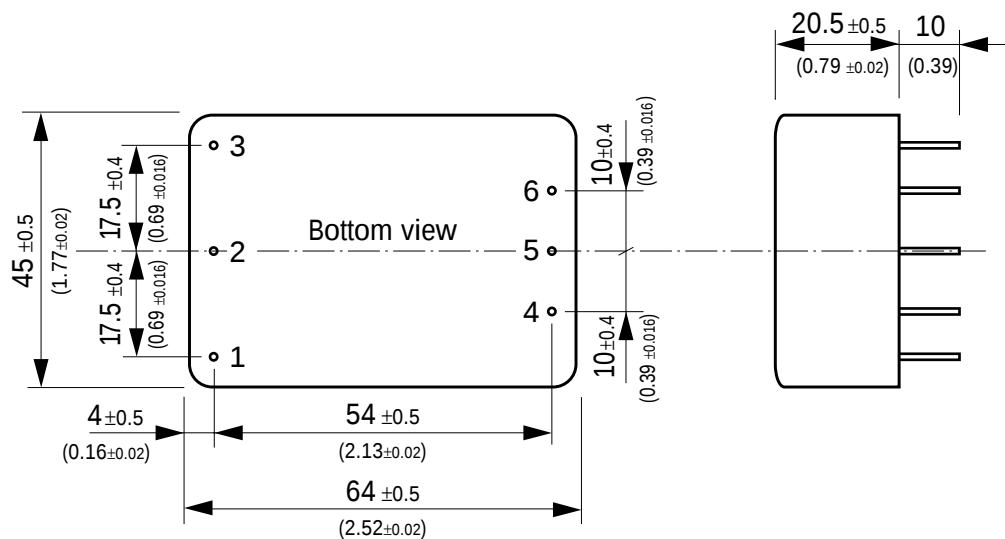
Temperature ranges	– Operating – Power derating above 50°C – Storage (non operating)	– 25 °C...+71 °C ambient temp. max. 3.75 % / °C – 40 °C...+85 °C
Temperature coefficient		0.02 % / °C
Efficiency		72 – 80 % (depending on model)
Humidity (non condensing)		95 % rel max.
Switching frequency		100 kHz typ. (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 – RF field susceptibility – Electrical fast transients / bursts on mainsline	IEC / EN 61000-4-2 4 kV / 8 kV IEC / EN 61000-4-3 3 V/m IEC / EN 61000-4-4 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 $\varnothing$ 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

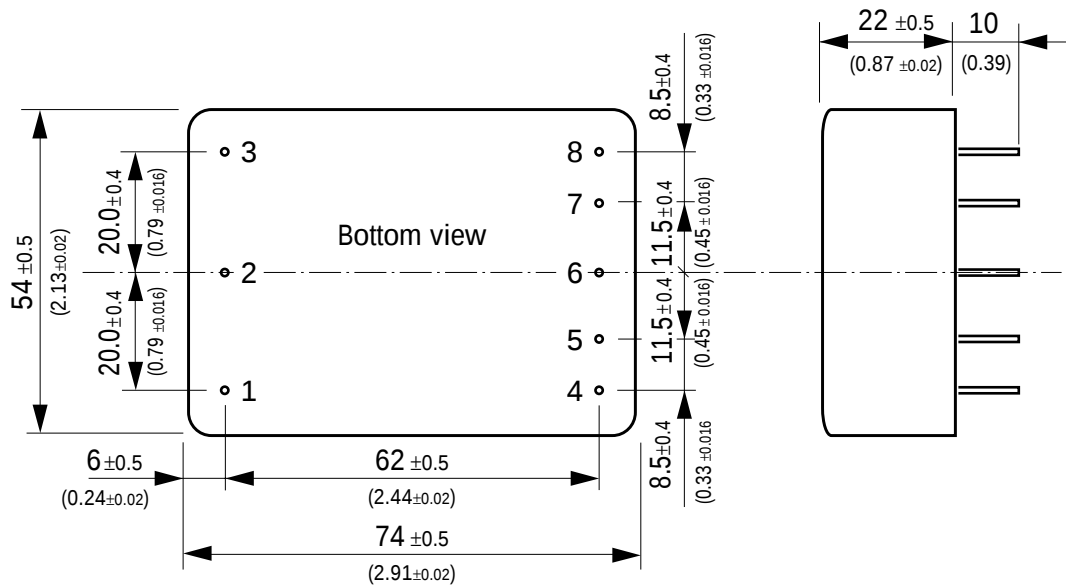
Outline Dimensions mm (inches)
TML 10xxx

Pin diameter $\varnothing$ 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)

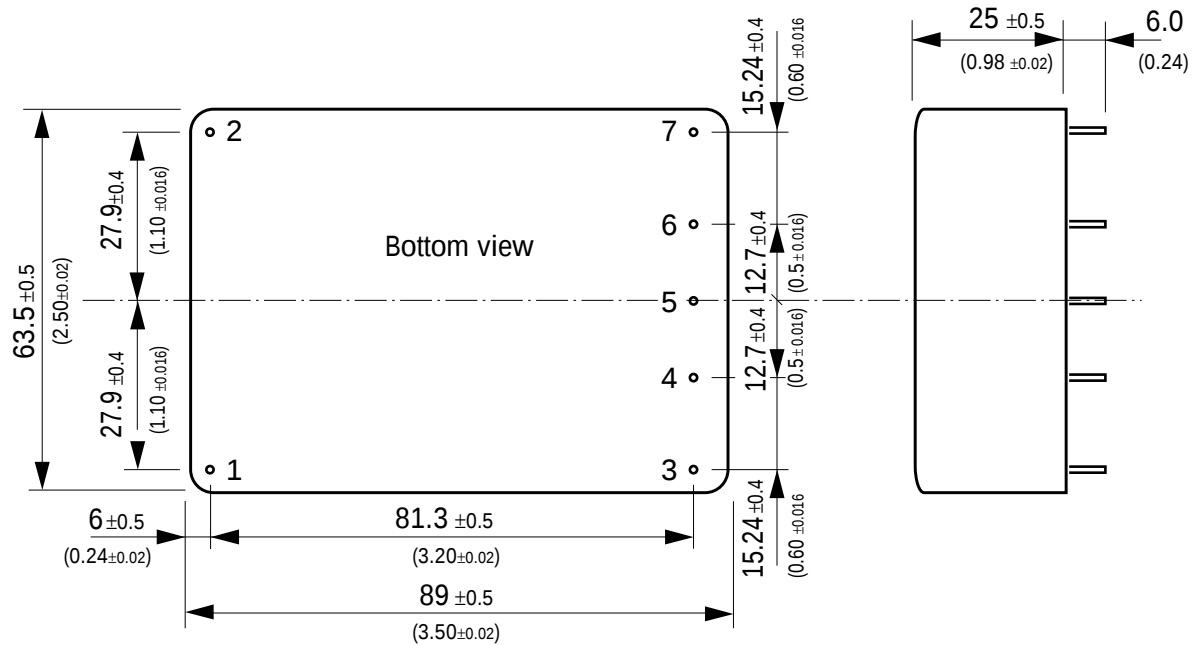
TML 15xxx



Pin diameter $\varnothing$ 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

Outline Dimensions mm (inches)
TML 30xxx


Pin diameter $\varnothing$ 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