

### Features

- ◆ AC/DC Power Modules
- ◆ PCB Mounting or Chassis Mounting with Screw Terminals
- ◆ 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)
- ◆ 3 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 Watt	5 VDC / 1000 mA		
TML 05112		12 VDC / 416 mA		
TML 05115		15 VDC / 333 mA		
TML 05124		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	10 Watt	5 VDC / 2000 mA		
TML 10112		12 VDC / 833 mA		
TML 10115		15 VDC / 666 mA		
TML 10124		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 PCB-mounting	Chassis mounting	Output Power max.	Output 1 Inom	Output 2 Inom	Output 3 Inom
TML 15105	TML 15105C	15 Watt	5 VDC / 3000 mA	-5 VDC / 1500 mA -12 VDC / 650 mA -15 VDC / 500 mA	-12 VDC / 200 mA -15 VDC / 150 mA
TML 15112	TML 15112C		12 VDC / 1250 mA		
TML 15115	TML 15115C		15 VDC / 1000 mA		
TML 15124	TML 15124C		24 VDC / 625 mA		
TML 15205	TML 15205C		5 VDC / 1500 mA		
TML 15212	TML 15212C		12 VDC / 650 mA		
TML 15215	TML 15215C		15 VDC / 500 mA		
TML 15512	TML 15512C		5 VDC / 2000 mA		
TML 15515	TML 15515C		5 VDC / 2000 mA		
TML 30103	TML 30103C	30 Watt	3.3 VDC / 6000 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
TML 30105	TML 30105C		5 VDC / 6000 mA		
TML 30112	TML 30112C		12 VDC / 2500 mA		
TML 30115	TML 30115C		15 VDC / 2000 mA		
TML 30124	TML 30124C		24 VDC / 1250 mA		
TML 30205	TML 30205C		5 VDC / 3000 mA		
TML 30212	TML 30212C		12 VDC / 1300 mA		
TML 30215	TML 30215C		15 VDC / 1000 mA		
TML 30252	TML 30252C		*5 VDC / 3000 mA		
TML 30512	TML 30512C		* 5 VDC / 3000 mA		
TML 30515	TML 30515C		*5 VDC / 3000 mA		

\* Output floating

## Input Specifications

Input voltage range	85 – 264 VAC
Input frequency	47 – 440 Hz
Input current no load	115 VAC/230 VAC 10 mA / 15 mA typ 15 mA / 20 mA typ 18 mA / 25 mA typ. 30 mA / 55 mA typ.
Input current full load	115 VAC/230 VAC 160 mA / 80 mA typ. 200 mA / 120 mA typ. 280 mA / 165 mA typ. 550 mA / 320 mA typ.
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	<ul style="list-style-type: none"> <li>– Input variation</li> <li>– Load variation (10–100%)</li> <li>– Single output models</li> <li>– Dual/ triple output models</li> </ul>	0.3 % max.  1.0 % max. 5 % max.
Minimum load		5 % for TML 30 single output models 10 % on main output of triple output models
Ripple and noise (20 MHz Bandwidth)	<ul style="list-style-type: none"> <li>– 3.3 &amp; 5 VDC output models:</li> <li>– other models:</li> </ul>	< 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 µF depending on model

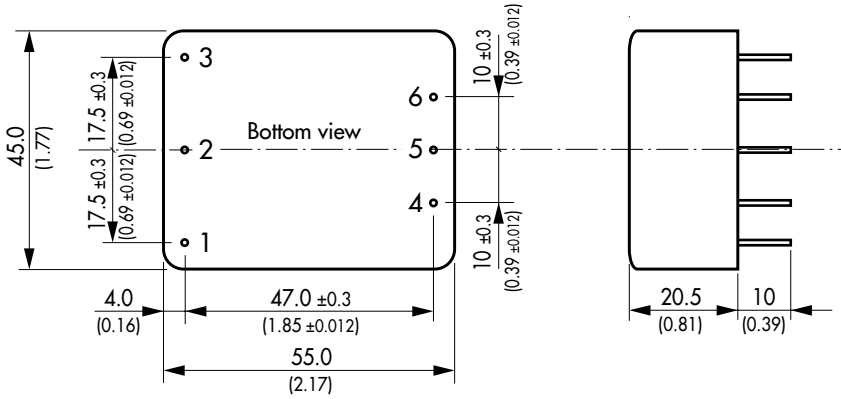
### General Specifications

Temperature ranges	<ul style="list-style-type: none"> <li>– Operating</li> <li>– Power derating above 50°C</li> <li>– Storage (non operating)</li> </ul>	– 25 °C...+71 °C 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	<ul style="list-style-type: none"> <li>– Electrostatic discharge ESD</li> <li>– RF field susceptibility</li> <li>– Electrical fast transients/bursts on mainsline</li> </ul>	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 5 Watt**

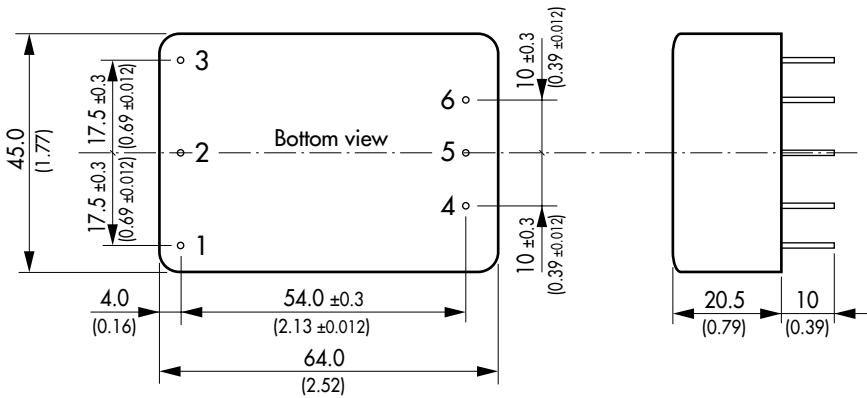


Pin-Out		
Pin	Single	Dual
1	FG	FG
2	AC(N)	AC(N)
3	AC(L)	AC(L)
4	-V out	-V out
5	NC	Common
6	+V out	+V out

Pin diameter  $\varnothing$  1.0 mm

**Weight: 80 g (2.8 oz)**

**TML 10 Watt**



Pin-Out		
Pin	Single	Dual
1	FG	FG
2	AC(N)	AC(N)
3	AC(L)	AC(L)
4	-V out	-V out
5	NC	Common
6	+V out	+V out

Pin diameter  $\varnothing$  1.0 mm

**Weight: 100 g (3.5 oz)**

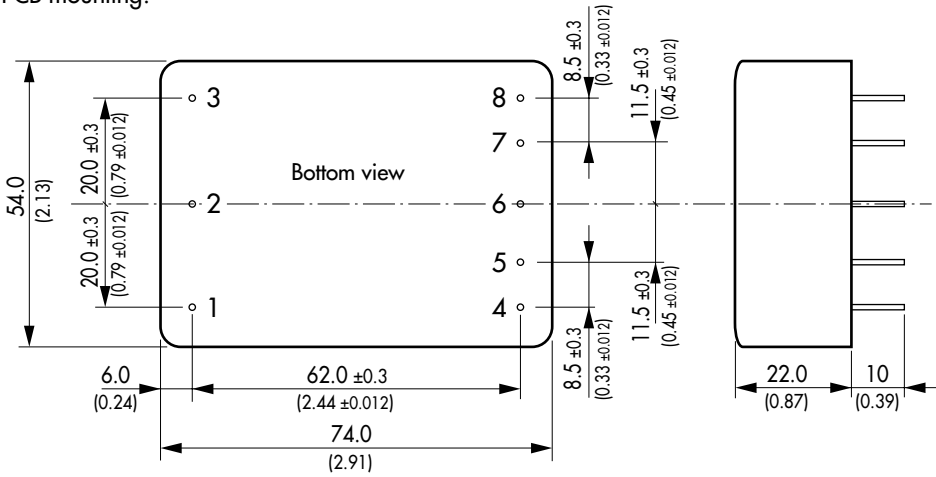
( ) = Inches

Tolerances = 0.5mm (0.02)

Specifications can be changed without notice

**Outline Dimensions mm (inches)**

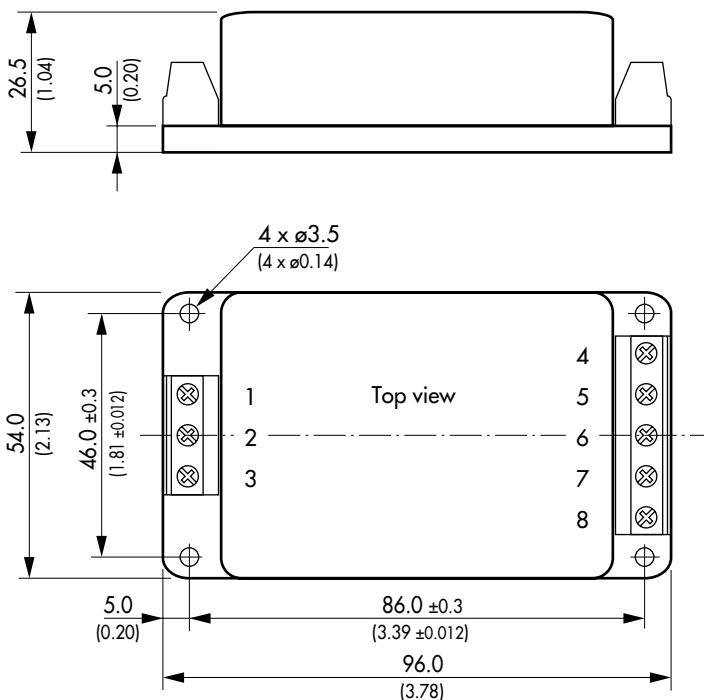
**TML 15 Watt**  
PCB mounting:



Pin diameter  $\varnothing$  1.0 mm

**Weight: 140 g (4.9 oz)**

Chassis mounting:



**Weight: 160 g (5.6 oz)**

( ) = Inches

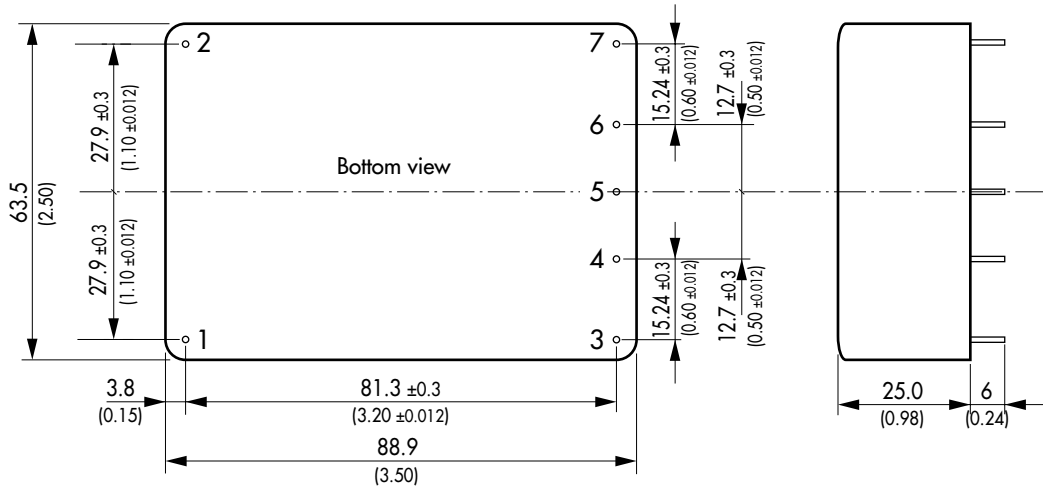
Tolerances = 0.5mm (0.02)

Specifications can be changed without notice

Pin-Out			
Pin	Single	Dual	Triple
1	FG	FG	FG
2	AC(N)	AC(N)	AC(N)
3	AC(L)	AC(L)	AC(L)
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)**

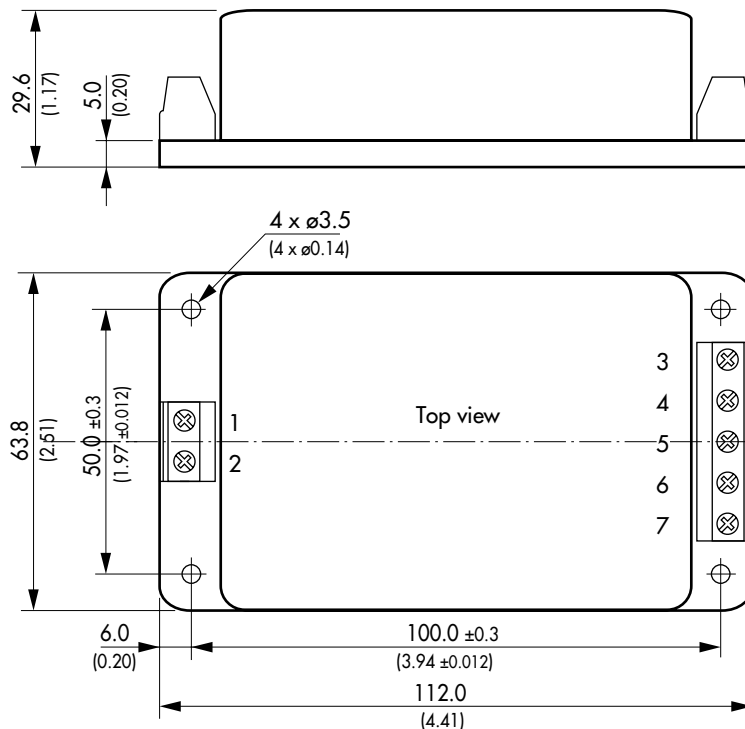
**TML 30 Watt**  
PCB mounting:



Pin diameter  $\varnothing$  1.0 mm

**Weight : 180 g (6.3 oz)**

Chassis mounting:



**Weight : 200 g (7.1 oz)**

Pin-Out				
Pin	Single	Dual sym.	Dual asym.	Triple
1	AC(N)	AC(N)	AC(N)	AC(N)
2	AC(L)	AC(L)	AC(L)	AC(L)
3	+V out	+V out	+V out 2	+V out 2
4	No Pin	No Pin	+V out 1	+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	Not conn.	-V out	Not conn.	-V out 3

( ) = Inches

Tolerances = 0.5mm (0.02)

Specifications can be changed without notice