

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 | |
| 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 | |

| Models | | | | |
|-----------|-------------------|-------------------|--------------------|------------------|
| OrderCode | Output Power max. | Output 1 Inom | Output 2 Inom | Output 3 Inom |
| TML 15105 | 15 Watt | 5 VDC / 3000 mA | | |
| TML 15112 | | 12 VDC / 1250 mA | | |
| TML 15115 | | 15 VDC / 1000 mA | | |
| TML 15124 | | 24 VDC / 625 mA | | |
| TML 15205 | | 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 | 30 Watt | 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 | | 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

www **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 |

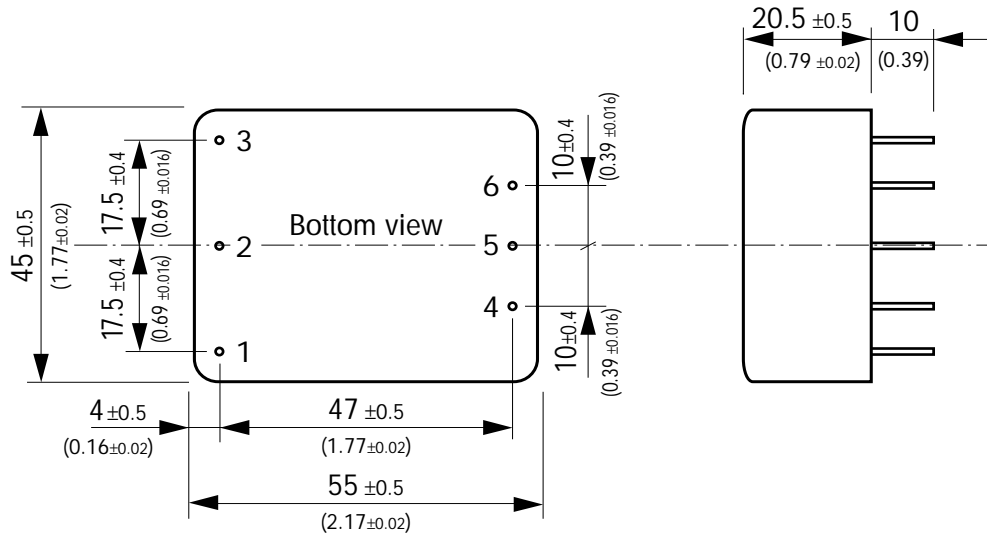
General Specifications

| | | |
|--|--|--|
| 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 \varnothing 1.0 mm

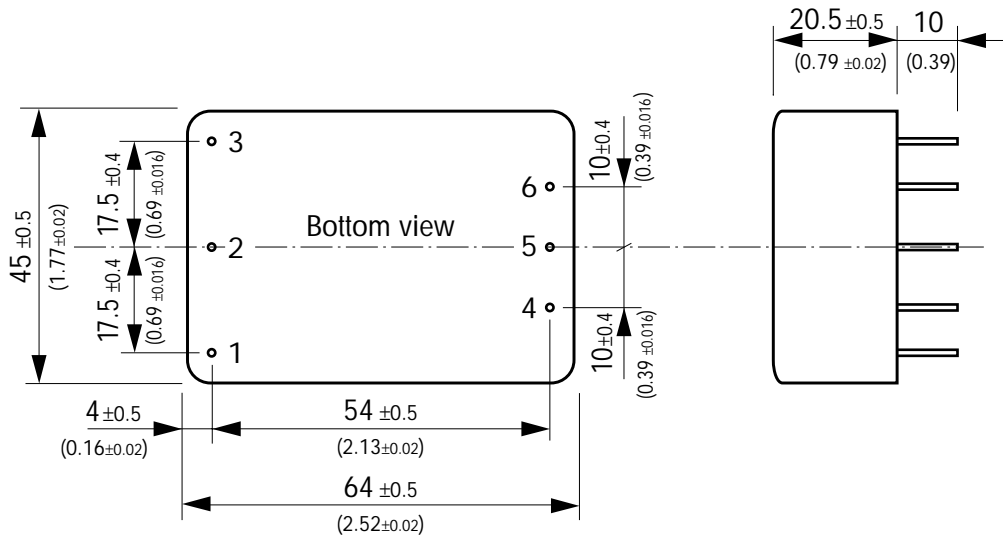
Weight: 80 g (2.8 oz)

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

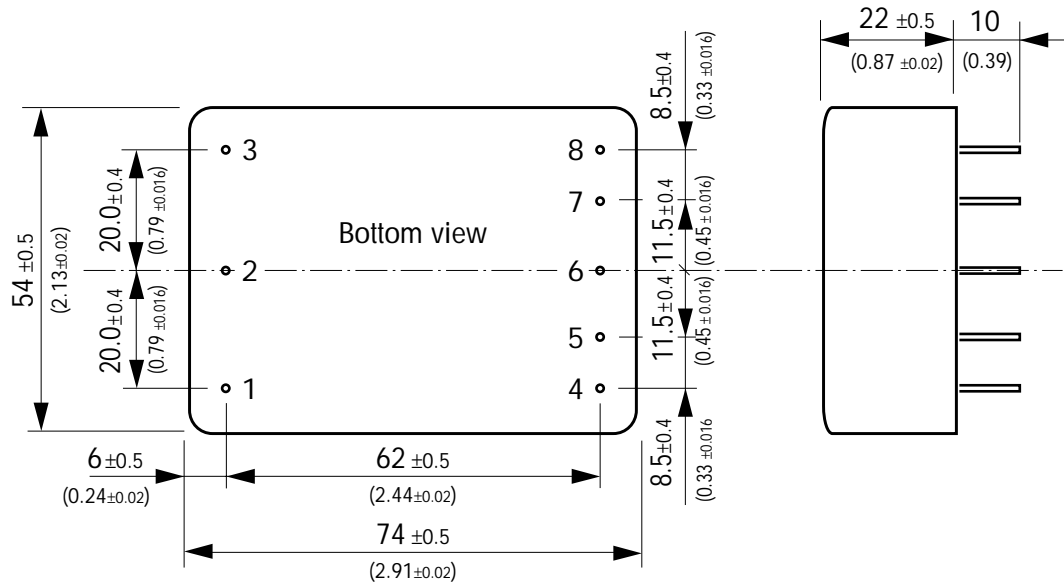
Weight: 100 g (3.5 oz)

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

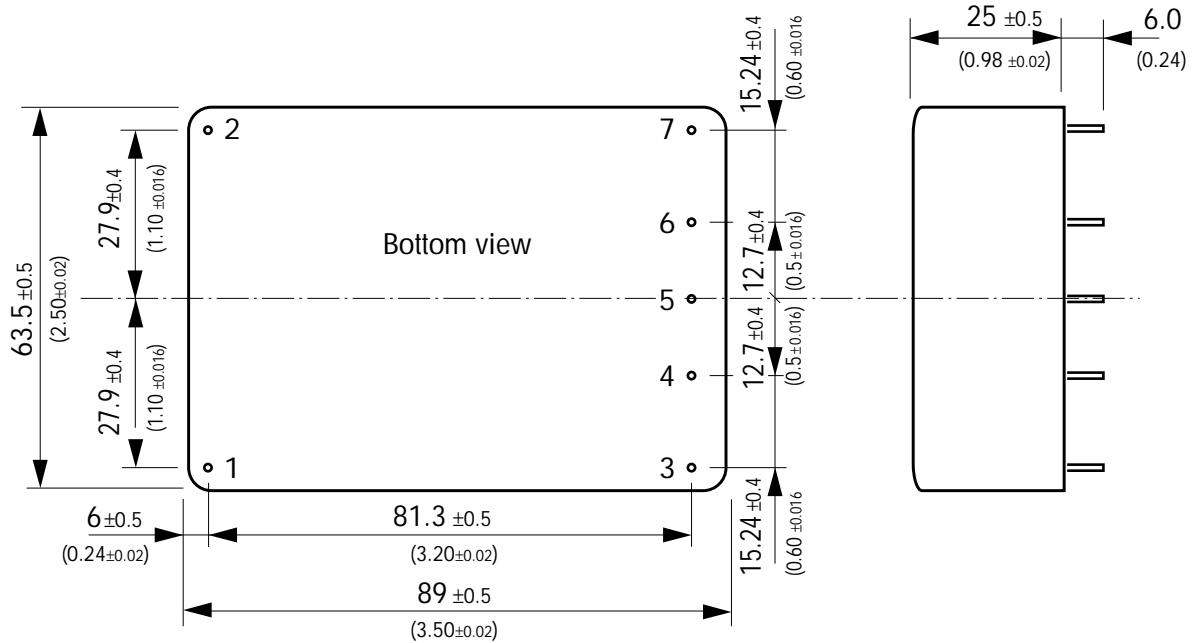
Weight: 140 g (4.9 oz)

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| 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)

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| 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