



### Features

- ◆ Ultra compact, low profile plastic casing
- ◆ Fully encapsulated (pollution/dust)
- ◆ Single-, dual- and triple output models
- ◆ 2 package versions:
  - Screw terminal block for chassis mount
  - Solder pins for direct PCB mount
- ◆ DIN-rail mount adaptor (optional)
- ◆ Universal input 85-264 VAC, 47-440 Hz
- ◆ Protection class II
- ◆ IEC/EN/UL 60950-1 approval, CB-report
- ◆ Over-temperature protection
- ◆ Protection against short circuit and overload
- ◆ 3-year product warranty



The TMP & TMPM series AC/DC Power Modules is a new range of fully encapsulated power supplies in an ultra-compact casing. They feature easy chassis mounting with screw terminal block connection or direct PCB mounting with solder pins. Full compliance with International safety standards for industrial control equipment qualifies the products for worldwide markets.

These power supplies offer a cost effective solution for many space critical applications in commercial and industrial electronic equipment and for polluted and dusty environment.

### Single Output Models 4 to 10 Watt

| Order code                 |            | Output power max. | Output            | Efficiency<br>typ. |
|----------------------------|------------|-------------------|-------------------|--------------------|
| PCB-mount with solder pins |            |                   |                   |                    |
|                            | TMPM 04103 | 4 W               | 3.3 VDC / 1200 mA | 70 %               |
|                            | TMPM 04105 |                   | 5.0 VDC / 800 mA  | 72 %               |
|                            | TMPM 04109 |                   | 9.0 VDC / 444 mA  | 75 %               |
|                            | TMPM 04112 |                   | 12 VDC / 333 mA   | 76 %               |
|                            | TMPM 04115 |                   | 15 VDC / 267 mA   | 76 %               |
|                            | TMPM 04124 |                   | 24 VDC / 167 mA   | 77 %               |
|                            | TMP 07103  | 4.6 W             | 3.3 VDC / 1400 mA | 70 %               |
|                            | TMP 07105  | 7 W               | 5.0 VDC / 1400 mA | 73 %               |
|                            | TMP 07112  |                   | 12 VDC / 583 mA   | 78 %               |
|                            | TMP 07115  |                   | 15 VDC / 466 mA   | 78 %               |
|                            | TMP 07124  |                   | 24 VDC / 291 mA   | 78 %               |
| Small footprint            | TMPM 10103 |                   | 8.3 W             | 3.3 VDC / 2500 mA  |
|                            | TMPM 10105 | 10 W              | 5.0 VDC / 2000 mA | 72 %               |
|                            | TMPM 10112 |                   | 12 VDC / 833 mA   | 76 %               |
|                            | TMPM 10115 |                   | 15 VDC / 667 mA   | 75 %               |
|                            | TMPM 10124 |                   | 24 VDC / 417 mA   | 72 %               |
| Low profile                | TMP 10103  |                   | 6.6 W             | 3.3 VDC / 2000 mA  |
|                            | TMP 10105  | 10 W              | 5.0 VDC / 2000 mA | 73 %               |
|                            | TMP 10112  |                   | 12 VDC / 833 mA   | 76 %               |
|                            | TMP 10115  |                   | 15 VDC / 666 mA   | 76 %               |
|                            | TMP 10124  |                   | 24 VDC / 416 mA   | 76 %               |

15 to 60 Watt and multi output models see next page ->

**Single Output Models 15 to 60 Watt**

| Order code                 |                               | Output power max. | Output              | Efficiency<br>typ. |
|----------------------------|-------------------------------|-------------------|---------------------|--------------------|
| PCB-mount with solder pins | Chassis mount, screw terminal |                   |                     |                    |
| TMP 15105                  | TMP 15105C                    | 15 W              | 5 VDC / 3000 mA     | 75 %               |
| TMP 15112                  | TMP 15112C                    |                   | 12 VDC / 1250 mA    | 79 %               |
| TMP 15115                  | TMP 15115C                    |                   | 15 VDC / 1000 mA    | 79 %               |
| TMP 15124                  | TMP 15124C                    |                   | 24 VDC / 625 mA     | 79 %               |
| TMP 15148                  | TMP 15148C                    |                   | 48 VDC / 310 mA     | 79 %               |
| TMP 30105                  | TMP 30105C                    | 30 W              | 5 VDC / 6000 mA     | 78 %               |
| TMP 30112                  | TMP 30112C                    |                   | 12 VDC / 2500 mA    | 80 %               |
| TMP 30115                  | TMP 30115C                    |                   | 15 VDC / 2000 mA    | 80 %               |
| TMP 30124                  | TMP 30124C                    |                   | 24 VDC / 1250 mA    | 80 %               |
| TMP 30148                  | TMP 30148C                    |                   | 48 VDC / 625 mA     | 80 %               |
| TMP 60105                  | TMP 60105C                    | 60 W              | 5.1 VDC / 10'000 mA | 79 %               |
| TMP 60112                  | TMP 60112C                    |                   | 12 VDC / 5000 mA    | 82 %               |
| TMP 60115                  | TMP 60115C                    |                   | 15 VDC / 4000 mA    | 83 %               |
| TMP 60124                  | TMP 60124C                    |                   | 24 VDC / 2500 mA    | 84 %               |
| TMP 60136                  | TMP 60136C                    |                   | 36 VDC / 1665 mA    | 84 %               |
| TMP 60148                  | TMP 60148C                    |                   | 48 VDC / 1250 mA    | 84 %               |

**Multi Output Models 4 to 30 Watt**

| Order code   |               | Output power | Output 1                        | Output 2                         | Output 3                       | Eff. typ. |
|--|---------------|--------------|---------------------------------|----------------------------------|--------------------------------|-----------|
| PCB-mount  | Chassis mount |              |                                 |                                  |                                |           |
| Models with common ground                                |               |              |                                 |                                  |                                |           |
| TMPM 04212   |               | 4 W          | +12 VDC / 166 mA                | -12 VDC / 166 mA                 |                                | 77 %      |
| TMPM 04215   |               |              | +15 VDC / 133 mA                | -15 VDC / 133 mA                 |                                | 77 %      |
| TMPM 04253   |               |              | +5.0 VDC / 600 mA               | +3.3 VDC / 150 mA                |                                | 72 %      |
| TMPM 04225   |               |              | +12 VDC / 250 mA                | +5.0 VDC / 120 mA                |                                | 75 %      |
| TMP 10212  |               | 10 W         | +12 VDC / 380 mA                | -12 VDC / 380 mA                 |                                | 77 %      |
| TMP 10215  |               |              | +15 VDC / 300 mA                | -15 VDC / 300 mA                 |                                | 77 %      |
| TMP 15212  | TMP 15212C    | 15 W         | +12 VDC / 650 mA                | -12 VDC / 650 mA                 |                                | 79 %      |
| TMP 15215  | TMP 15215C    |              | +15 VDC / 500 mA                | -15 VDC / 500 mA                 |                                | 79 %      |
| TMP 30212  | TMP 30212C    | 30 W         | +12 VDC / 1300 mA               | -12 VDC / 1300 mA                |                                | 80 %      |
| TMP 30215  | TMP 30215C    |              | +15 VDC / 1000 mA               | -15 VDC / 1000 mA                |                                | 80 %      |
| Models with output 1 isolated from output 2/3 (floating) |               |              |                                 |                                  |                                |           |
| TMP 15252  | TMP 15252C    | 15 W         | 5.0 VDC / 1500 mA               | 12 VDC / 625 mA                  |                                | 72 %      |
| TMP 15512  | TMP 15512C    |              | 5.0 VDC / 2000 mA               | +12 VDC / 200 mA                 | -12 VDC / 200 mA               | 74 %      |
| TMP 15515  | TMP 15515C    |              | 5.0 VDC / 2000 mA               | +15 VDC / 150 mA                 | -15 VDC / 150 mA               | 74 %      |
| TMP 30252  | TMP 30252C    | 30 W         | 5.0 VDC / 3000 mA <sup>2)</sup> | 12 VDC / 1250 mA <sup>2)</sup>   |                                | 76 %      |
| TMP 30512  | TMP 30512C    |              | 5.0 VDC / 3000 mA <sup>2)</sup> | +12 VDC / 600 mA <sup>2)</sup>   | -12 VDC / 600 mA <sup>2)</sup> | 76 %      |
| TMP 30515  | TMP 30515C    |              | 5.0 VDC / 3000 mA <sup>2)</sup> | +15 VDC / 500 mA <sup>2)</sup>   | -15 VDC / 500 mA <sup>2)</sup> | 76 %      |
| TMP 30522  | TMP 30522C    |              | 5.0 VDC / 3000 mA <sup>2)</sup> | +12 VDC / 1000 mA <sup>2)</sup>  | -12 VDC / 250 mA <sup>3)</sup> | 76 %      |
| TMP 30316  | TMP 30316C    |              | 3.3 VDC / 4000 mA <sup>1)</sup> | +5.0 VDC / 1500 mA <sup>1)</sup> | +12 VDC / 250 mA <sup>3)</sup> | 71 %      |
| TMP 30317  | TMP 30317C    |              | 5.0 VDC / 4500 mA <sup>1)</sup> | +3.3 VDC / 1000 mA <sup>2)</sup> | +12 VDC / 250 mA <sup>3)</sup> | 71 %      |

 Peak current, total power not to exceede 30 Watt: <sup>1)</sup> 133 %

<sup>2)</sup> 150 %

<sup>3)</sup> 200 %

### Input Specifications

|  |   |   |
|--|---|---|
| Input voltage                                    | – nominal<br>– AC range (universal input)<br>– DC range | 100 – 240 VAC<br>85 – 264 VAC<br>120 – 370 VDC  |
| Input frequency                                  | – nominal<br>– range                                    | 50 / 60 Hz<br>4 – 30 W models: 47 – 440 Hz<br>60 W models: 47 – 63 Hz   |
| Input current at full load                       | – 115 VAC / 230 VAC input                               | 4 W models: 80 mA / 55 mA typ.<br>7 W models: 150 mA / 100 mA typ.<br>10 W models: 200 mA / 130 mA typ.<br>15 W models: 300 mA / 190 mA typ.<br>30 W models: 550 mA / 330 mA typ.<br>60 W models: 1050 mA / 670 mA typ. |
| External input fuse required (recommended value) |   | 4 W models: 1.0 A slow blow<br>7 – 15 W models: 2.0 A slow blow<br>30 W models: 3.5 A slow blow<br>60 W models: 6.3 A slow blow   |

### Output Specifications

|   |   |   |
|---|---|---|
| Voltage set accuracy                                      |   | ±2 % max.   |
| Regulation  | – Input variation Output 1<br>– Input variation Output 2/3<br>– Load variation TPM 04103 model (0–100%):<br>single and floating outputs (10–100%):<br>common ground outputs balanced load (10–100%):<br>common ground outputs unbalanced load (20/90%): | 1 % max.<br>3 % max.<br>1.5 % max.<br>1 % max. (0–100% for TPM 04 models)<br>2.5 % max.<br>5.0 % max.   |
| Minimum load  | TPM 04 single and sym.dual models:<br>TPM 04 asym. dual models:<br>single and dual output models:<br>triple output models main output:<br>triple output models auxiliary outputs:   | not required<br>25% per output<br>10 % of rated max. current<br>10 % of rated max. current<br>20 % of rated max. current<br>operation at lower load condition will not damage these power supplies, however, they may not meet all listed specifications. |
| Ripple and noise (20MHz bandwidth)                        | 3.3 VDC & 5.0 VDC outputs:<br>other outputs:  | 1.8 % of Vout [mVp-p]<br>1.0 % of Vout [mVp-p]  |
| Overload protection by current limit                      |   | 105 % min. of Inom, fold back, automatic recovery (long term overload condition may cause damage to the power supply)   |
| Overvoltage protection by Zehner diode (main output only) |   | 120 % of Vout typ.  |
| Start-up time   |   | 400 ms typ.   |
| Hold-up time  |   | 20 ms typ.  |

| Max. capacitive load [µF] |                           | Model series |        |        |        |        |        |        |
|---------------------------|---------------------------|--------------|--------|--------|--------|--------|--------|--------|
| Output:                   |                           | TPM 04       | TMP 07 | TPM 10 | TMP 10 | TMP 15 | TMP 30 | TMP 60 |
| Single output models:     | 3.3 VDC                   | 1200         | 2200   | 2200   | 3900   | -      | -      | -      |
|                           | 5.0 / 5.1 VDC             | 800          | 2200   | 2200   | 3300   | 3900   | 8000   | 8000   |
|                           | 9.0 VDC                   | 440          | -      | -      | -      | -      | -      | -      |
|                           | 12 / 15 VDC               | 260          | 1000   | 1000   | 2200   | 2200   | 3900   | 3900   |
|                           | 24 VDC                    | 160          | 680    | 680    | 1000   | 1000   | 1500   | 1500   |
|                           | 36 VDC                    | -            | -      | -      | -      | -      | -      | 1000   |
| Dual output models:       | 48 VDC                    | -            | -      | -      | -      | 680    | 1000   | 800    |
|                           | 3.3 / 5.0 VDC             | 4700         | -      | -      | -      | 2000   | 3900   | -      |
| Triple output models:     | +12 / -12 / +15 / -15 VDC | 260          | -      | -      | 1000   | 1500   | 1500   | -      |
|                           | 3.3 / 5.0 VDC             | -            | -      | -      | -      | 2200   | 2200   | -      |
| Triple output models:     | +12 / -12 / +15 / -15 VDC | -            | -      | -      | -      | 1500   | 1500   | -      |

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

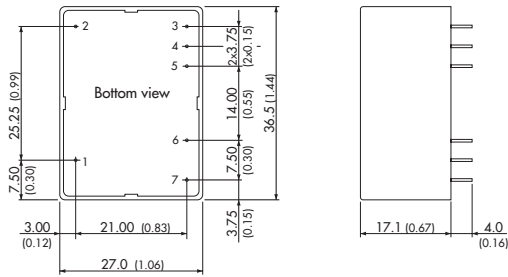
**General Specifications**

|  |  |   |
|--|--|---|
| Temperature ranges   | – Operating  | TMPM 04 models: –25°C to +60°C (no derating)<br>TMP 10 models: –25°C to +50°C (no derating)<br>other models: –25°C to +70°C (with derating)<br>–40°C to +85°C   |
|  | – Storage (non-operating)  |   |
| Power derating   |  | 3.3 %/K above +50°C to +65°C<br>5.0 %/K above +65°C to +70°C<br>(no derating approved for TMPM04 and TMP10 models)  |
| Over temperature protection  |  | at 90°C (automatic recovery at 67°C)  |
| Temperature coefficient  |  | 0.02 %/K  |
| Humidity (non-condensing)  |  | 95 % rel. H max.  |
| Switching frequency  |  | 100 kHz typ. fixed  |
| Isolation voltage (60 sec.)  | – Input/Output   | 3'000 VAC   |
| Isolation resistance   | – Input/Output   | 100 MOhm (at 500 VDC)   |
| Altitude during operation  | TMP 10, TMPM 04 & 10, :<br>other models:   | 2'000 m max. (6'560 ft) approved<br>3'000 m max. (9'840 ft) approved  |
| Electromagnetic compatibility (EMC), Emissions                           |  | EN 61000-6-3: 2007<br>EN 61204-3: 2000, class A<br>EN 55022, level B, FCC Part 15 level B   |
| Electromagnetic compatibility (EMC), Immunity                            | – Electrostatic discharge ESD<br>– RF field susceptibility<br>– Electrical fast transient / burst immunity input<br>– Electrical fast transient / burst immunity output<br>– Surge immunity line – neutral<br>– Surge immunity output<br>– Immunity to conducted RF disturbances<br>– Mains voltage dips and interruptions | EN 61000-6-2: 2005<br>EN 61204-3: 2000, class A<br>EN 61000-4-2 8 kV / 4 kV, criteria B<br>EN 61000-4-3 10 V/m, criteria A<br>EN 61000-4-4 ±2 kV, criteria B<br>EN 61000-4-4 ±2 kV, criteria B<br>EN 61000-4-5, ±1 kV, criteria B<br>EN 61000-4-5 ±0.5 kV, criteria B<br>EN 61000-4-6 10 V, criteria B<br>EN 61000-4-11 30 % 10 ms, criteria B<br>60 % 100 ms, criteria C<br>95 % 5000 ms, criteria C   |
| EMC test certificates  |  | <a href="http://www.tracopower.com/products/tmp-emc.pdf">www.tracopower.com/products/tmp-emc.pdf</a>  |
| Protection class II  |  | to IEC/EN 60536   |
| Safety standards   | – Information technology equipment<br>– Industrial control equipment   | IEC/EN 60950-1, UL 60950-1<br>UL/cUL 508 (chassis mount single and symmetric dual output models only)   |
| Safety approvals   | – CB certificate for IEC 60950-1<br>– UL approvals for UL 60950-1<br>– UL approval for UL 508 (chassis mount models only)  | TMPM 04 models: <a href="http://www.tracopower.com/products/tmpm04-cb.pdf">www.tracopower.com/products/tmpm04-cb.pdf</a><br>TMP 07 models: <a href="http://www.tracopower.com/products/tmp07-cb.pdf">www.tracopower.com/products/tmp07-cb.pdf</a><br>TMP 10 models: <a href="http://www.tracopower.com/products/tmp10-cb.pdf">www.tracopower.com/products/tmp10-cb.pdf</a><br>TMPM 10 models: <a href="http://www.tracopower.com/products/tmpm10-cb.pdf">www.tracopower.com/products/tmpm10-cb.pdf</a><br>TMP 15 models: <a href="http://www.tracopower.com/products/tmp15-cb.pdf">www.tracopower.com/products/tmp15-cb.pdf</a><br>TMP 30 single output models: <a href="http://www.tracopower.com/products/tmp30-cb.pdf">www.tracopower.com/products/tmp30-cb.pdf</a><br>TMP 30 dual / triple output models: <a href="http://www.tracopower.com/products/tmp30-cb2.pdf">www.tracopower.com/products/tmp30-cb2.pdf</a><br>TMP 60 models: <a href="http://www.tracopower.com/products/tmp60-cb.pdf">www.tracopower.com/products/tmp60-cb.pdf</a><br><a href="http://www.ul.com">www.ul.com</a> -> certifications -> File: e188913<br><a href="http://www.ul.com">www.ul.com</a> -> certifications -> File: e322109 |
| Reliability /calculated MTBF<br>(MIL-HDBK-217F, at +25°C, ground benign) | TMP 07, TMPM 04 & 10 models:<br>TMP 10 models:<br>TMP 15 models:<br>TMP 30 models:<br>TMP 60 models:   | >330'000 h<br>>300'000 h<br>>280'000 h<br>>250'000 h<br>>125'000 h  |
| Casing material  |  | plastic resin + fiberglass (UL 94V-0 rated)   |
| Environmental compliance   | – Reach<br>– RoHS  | <a href="http://www.tracopower.com/products/tmp-reach.pdf">www.tracopower.com/products/tmp-reach.pdf</a><br>RoHS directive 2011/65/EU   |

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

**Outline Dimensions**

**TMPM 04 models:**

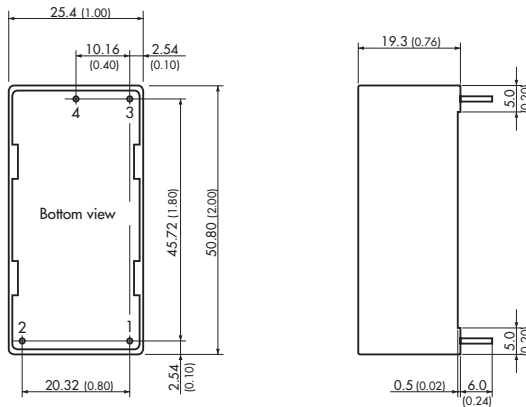


Pin diameter: 0.5 (0.02)  
Weight: 26 g (0.92 oz)

| Pinout |        |          |
|--------|--------|----------|
| Pin    | Single | Dual     |
| 1      | ntc    |          |
| 2      | ntc    |          |
| 3      | +Vout  | Vout 1   |
| 4      | -Vout  | com. 1/2 |
| 5      | ntc    | Vout 2   |
| 6      | AC (N) |          |
| 7      | AC (L) |          |

(ntc = not to connect)

**TMP 07 models:**



| Pinout |        |
|--------|--------|
| Pin    | Single |
| 1      | AC (N) |
| 2      | AC (L) |
| 3      | +Vout  |
| 4      | -Vout  |

Pin diameter: 1.0 (0.04)  
Weight: 44 g (1.55 oz)

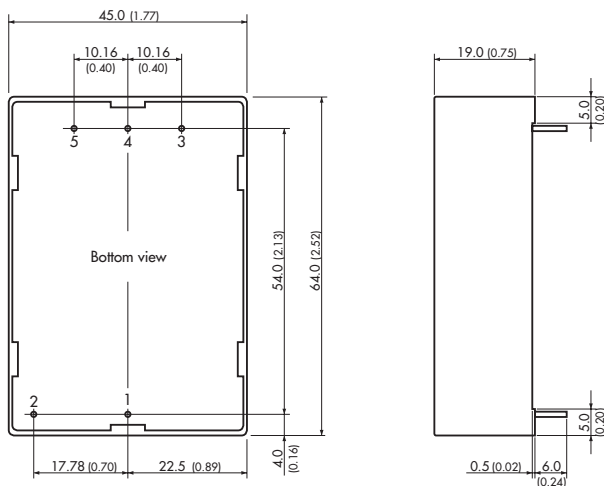
**TMPM 10 models:**



| Pinout |        |
|--------|--------|
| Pin    | Single |
| 1      | AC (N) |
| 2      | AC (L) |
| 3      | +Vout  |
| 4      | -Vout  |

Pin diameter: 1.0 (0.04)  
Weight: 54 g (1.90 oz)

**TMP 10 models:**



| Pinout |        |          |
|--------|--------|----------|
| Pin    | Single | Dual     |
| 1      | AC (N) | AC (N)   |
| 2      | AC (L) | AC (L)   |
| 3      | -Vout  | Vout 2   |
| 4      | ntc    | com. 1/2 |
| 5      | +Vout  | Vout 1   |

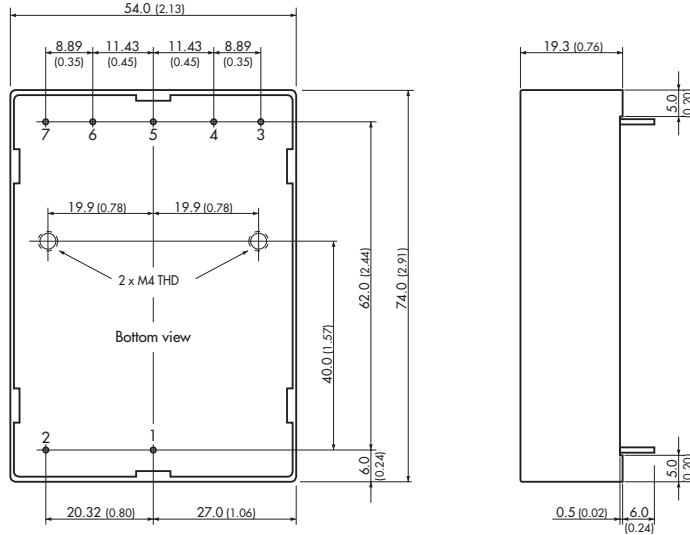
(ntc = not to connect)

Pin diameter: 1.0 (0.04)  
Weight: 92 g (3.25 oz)

Dimensions in [mm], ( ) = Inches  
Case tolerances: ±0.5 (±0.02)  
Pin pitch tolerance: ±0.25 (±0.01)

**Outline Dimensions**

**TMP 15 models for PCB mount:**



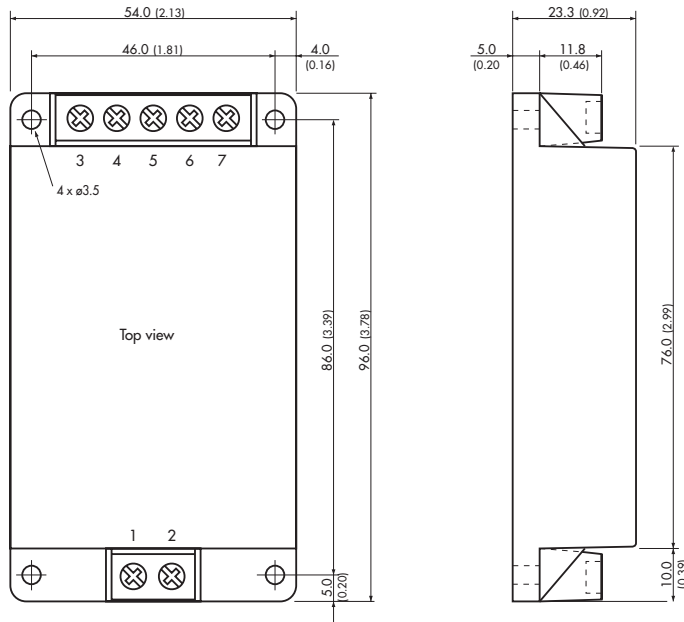
| Pin-Out |        |           |            |         |
|---------|--------|-----------|------------|---------|
| Pin     | Single | Dual sym. | Dual asym. | Triple  |
| 1       | AC (N) |           |            |         |
| 2       | AC (L) |           |            |         |
| 3       | no pin |           |            | Vout 3  |
| 4       | -Vout  | Vout 2    | -Vout 2    | com.2/3 |
| 5       | no pin | com.1/2   | +Vout 2    | Vout 2  |
| 6       | +Vout  | Vout 1    | -Vout 1    | -Vout 1 |
| 7       | no pin |           | +Vout 1    | +Vout 1 |

Max Screw penetration: 5.5 (0.21)

Pin diameter: 1.0 (0.04)

Weight: 114 g (4.02 oz)

**TMP 15 models for chassis mount:**



| Connection |        |           |            |         |
|------------|--------|-----------|------------|---------|
| Pin        | Single | Dual sym. | Dual asym. | Triple  |
| 1          | AC (N) |           |            |         |
| 2          | AC (L) |           |            |         |
| 3          | ntc    |           |            | Vout 3  |
| 4          | -Vout  | Vout 2    | -Vout 2    | com.2/3 |
| 5          | ntc    | com.1/2   | +Vout 2    | Vout 2  |
| 6          | +Vout  | Vout 1    | -Vout 1    | -Vout 1 |
| 7          | ntc    |           | +Vout 1    | +Vout 1 |

(ntc = not to connect)

Weight: 162 g (5.71 oz)

Dimensions in [mm], ( ) = Inches

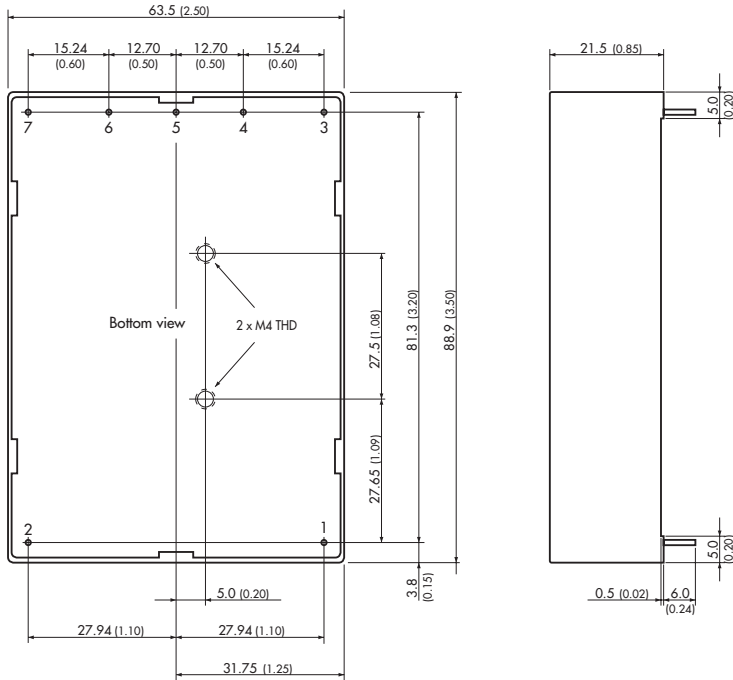
Case tolerances:  $\pm 0.5$  ( $\pm 0.02$ )

Pin pitch tolerance:  $\pm 0.25$  ( $\pm 0.01$ )

Mounting hole tolerance:  $\pm 0.25$  ( $\pm 0.02$ )

**Outline Dimensions**

**TMP 30 models for PCB mount:**



| Pinout / Connection |              |           |            |            |
|---------------------|--------------|-----------|------------|------------|
| Pin                 | Single       | Dual sym. | Dual asym. | Triple     |
| 1                   | AC (N)       |           |            |            |
| 2                   | AC (L)       |           |            |            |
| 3                   | +Vout        | Vout 1    | +Vout 2    | Vout 2     |
| 4                   | no pin / ntc |           | +Vout 1    | +Vout 1    |
| 5                   | -Vout        | com.1/2   | -Vout 2    | com<br>2/3 |
| 6                   | no pin / ntc |           | -Vout 1    | -Vout 1    |
| 7                   | ntc          | Vout 2    | ntc        | Vout 3     |

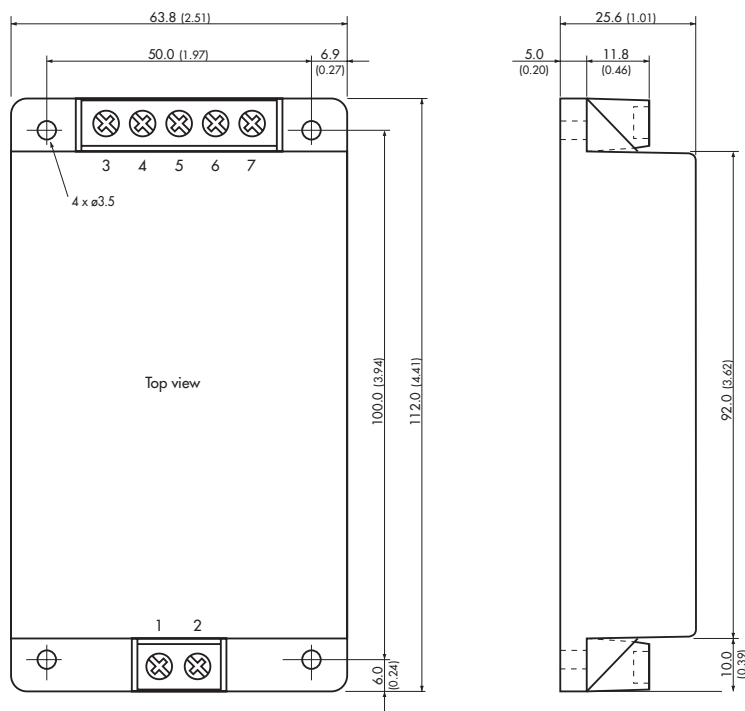
(ntc = not to connect)

Max Screw penetration: 5.5 (0.21)

Pin diameter: 1.0 (0.04)

Weight: 177 g (6.24 oz)

**TMP 30 models for chassis mount:**



Weight: 191 g (6.74 oz)

Dimensions in [mm], ( ) = Inches

Case tolerances: ±0.5 (±0.02)

Pin pitch tolerance: ±0.25 (±0.01)

Mounting hole tolerance: ±0.25 (±0.02)





**DIN-Rail Mounting Kit**

Adapter for mounting on DIN-rails as per EN 50022-35 (snap-on mounting)



**DIN-Rail Mounting Kit**

| Order code | For models              |
|------------|-------------------------|
| TMP-MK1    | TMP 15xxxC              |
| TMP-MK2    | TMP 30xxxC & TMP 60xxxC |

Kit contains interface plate, DIN-rail clip and necessary screws.

Specifications can be changed any time without notice.

Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at [www.tracopower.com](http://www.tracopower.com)

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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