



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

### Output Specifications

Voltage set accuracy		±2 % max.
Regulation	– Input variation Output 1 – Input variation Output 2/3 – Load variation TPM 04103 model (0–100%): single and floating outputs (10–100%): common ground outputs balanced load (10–100%): common ground outputs unbalanced load (20/90%):	1 % max. 3 % max. 1.5 % max. 1 % max. (0–100% for TPM 04 models) 2.5 % max. 5.0 % max.
Minimum load	TPM 04 single and sym.dual models: TPM 04 asym. dual models: single and dual output models: triple output models main output: triple output models auxiliary outputs:	not required 25% per output 10 % of rated max. current 10 % of rated max. current 20 % of rated max. current 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: other outputs:	1.8 % of Vout [mVp-p] 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.

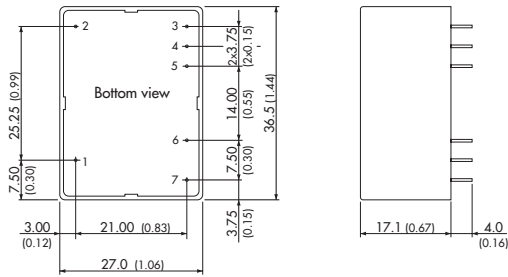
**General Specifications**

Temperature ranges	– Operating	TMPM 04 models: –25°C to +60°C (no derating) TMP 10 models: –25°C to +50°C (no derating) other models: –25°C to +70°C (with derating)
	– Storage (non-operating)	–40°C to +85°C
Power derating		3.3 %/K above +50°C to +65°C 5.0 %/K above +65°C to +70°C (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, : other models:	2'000 m max. (6'560 ft) approved 3'000 m max. (9'840 ft) approved
Electromagnetic compatibility (EMC), Emissions		EN 61000-6-3: 2007 EN 61204-3: 2000, class A EN 55022, level B, FCC Part 15 level B
Electromagnetic compatibility (EMC), Immunity	– Electrostatic discharge ESD – RF field susceptibility – Electrical fast transient / burst immunity input – Electrical fast transient / burst immunity output – Surge immunity line – neutral – Surge immunity output – Immunity to conducted RF disturbances – Mains voltage dips and interruptions	EN 61000-6-2: 2005 EN 61204-3: 2000, class A EN 61000-4-2 8 kV / 4 kV, criteria B EN 61000-4-3 10 V/m, criteria A EN 61000-4-4 ±2 kV, criteria B EN 61000-4-4 ±2 kV, criteria B EN 61000-4-5, ±1 kV, criteria B EN 61000-4-5 ±0.5 kV, criteria B EN 61000-4-6 10 V, criteria B EN 61000-4-11 30 % 10 ms, criteria B 60 % 100 ms, criteria C 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 – Industrial control equipment	IEC/EN 60950-1, UL 60950-1 UL/cUL 508 (chassis mount single and symmetric dual output models only)
Safety approvals	– CB certificate for IEC 60950-1 – UL approvals for UL 60950-1 – 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> TMP 07 models: <a href="http://www.tracopower.com/products/tmp07-cb.pdf">www.tracopower.com/products/tmp07-cb.pdf</a> TMP 10 models: <a href="http://www.tracopower.com/products/tmp10-cb.pdf">www.tracopower.com/products/tmp10-cb.pdf</a> TMPM 10 models: <a href="http://www.tracopower.com/products/tmpm10-cb.pdf">www.tracopower.com/products/tmpm10-cb.pdf</a> TMP 15 models: <a href="http://www.tracopower.com/products/tmp15-cb.pdf">www.tracopower.com/products/tmp15-cb.pdf</a> TMP 30 single output models: <a href="http://www.tracopower.com/products/tmp30-cb.pdf">www.tracopower.com/products/tmp30-cb.pdf</a> TMP 30 dual / triple output models: <a href="http://www.tracopower.com/products/tmp30-cb2.pdf">www.tracopower.com/products/tmp30-cb2.pdf</a> TMP 60 models: <a href="http://www.tracopower.com/products/tmp60-cb.pdf">www.tracopower.com/products/tmp60-cb.pdf</a> <a href="http://www.ul.com">www.ul.com</a> -> certifications -> File: e188913 <a href="http://www.ul.com">www.ul.com</a> -> certifications -> File: e322109
Reliability /calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)	TMP 07, TMPM 04 & 10 models: TMP 10 models: TMP 15 models: TMP 30 models: TMP 60 models:	>330'000 h >300'000 h >280'000 h >250'000 h >125'000 h
Casing material		plastic resin + fiberglass (UL 94V-0 rated)
Environmental compliance	– Reach – RoHS	<a href="http://www.tracopower.com/products/tmp-reach.pdf">www.tracopower.com/products/tmp-reach.pdf</a> 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:**

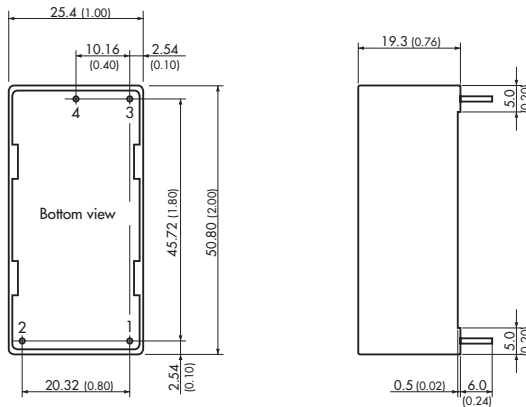


Pin diameter: 0.5 (0.02)  
Weight: 26 g (0.92 oz)

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)

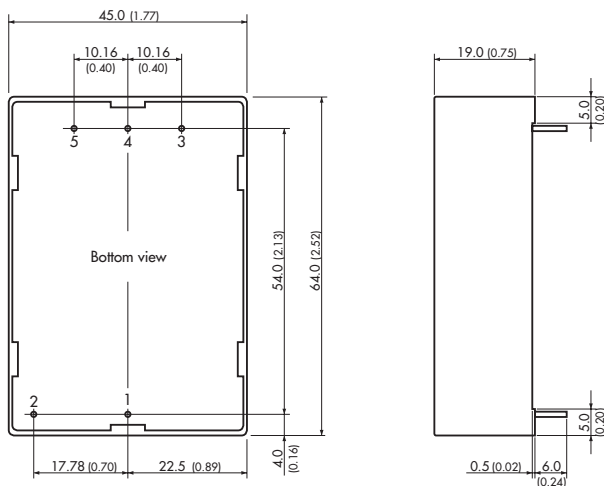
**TMPM 10 models:**



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

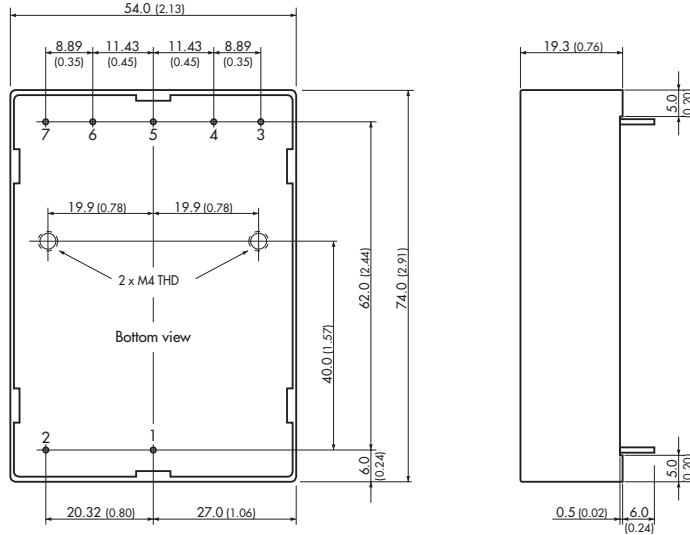
(ntc = not to connect)

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:**



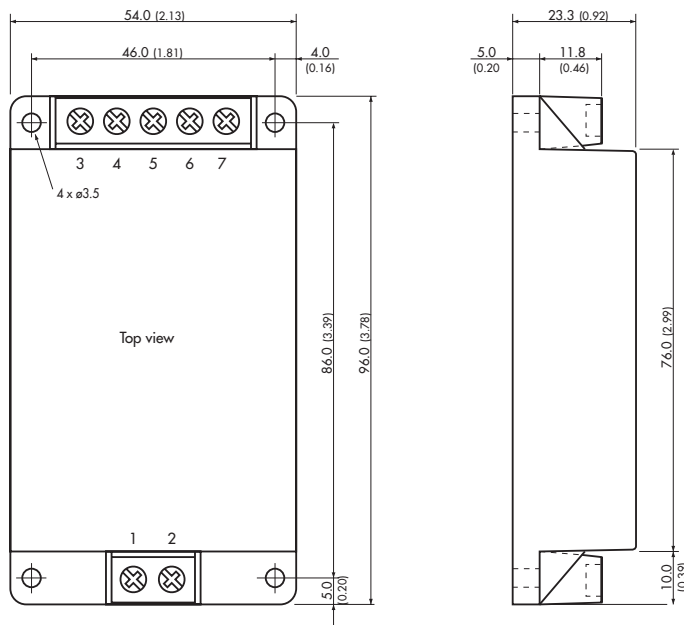
Pin-Out				
Pin	Single	Dual sym.	Dual asym.	Triple
1	AC (N)			
2	AC (L)			
3	no pin			Vout 3
4	-Vout	Vout 2	-Vout 2	com.2/3
5	no pin	com.1/2	+Vout 2	Vout 2
6	+Vout	Vout 1	-Vout 1	-Vout 1
7	no pin		+Vout 1	+Vout 1

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

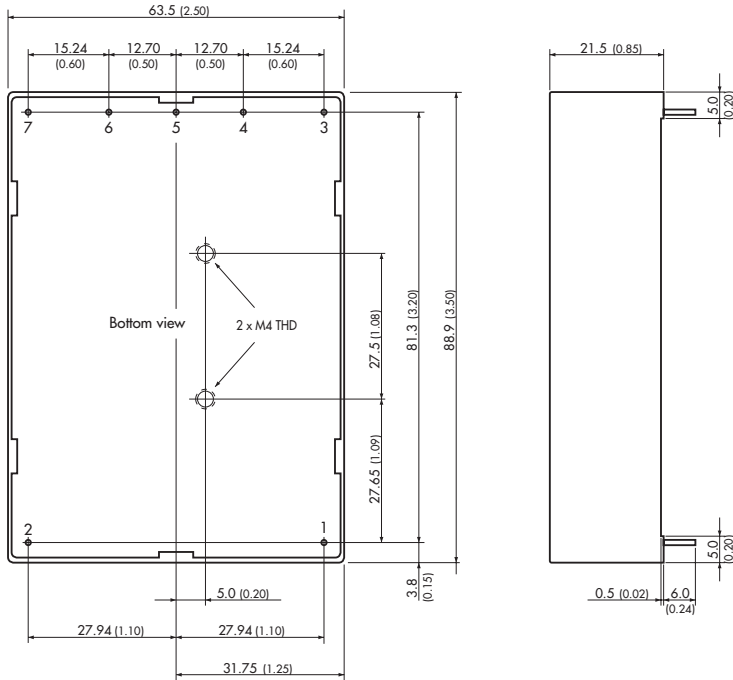
Case tolerances: ±0.5 (±0.02)

Pin pitch tolerance: ±0.25 (±0.01)

Mounting hole tolerance: ±0.25 (±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 2/3
6	no pin / ntc		-Vout 1	-Vout 1
7	ntc	Vout 2	ntc	Vout 3

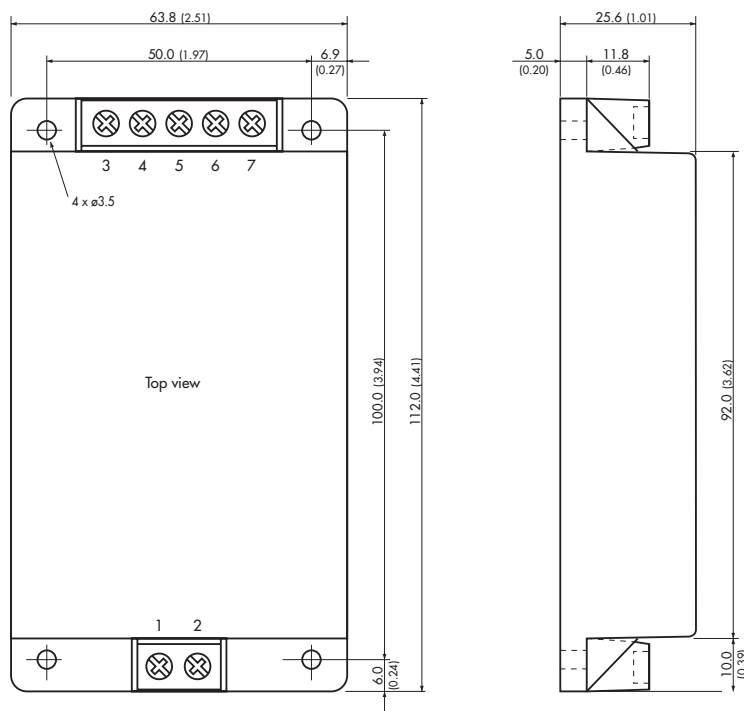
(ntc = not to connect)

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)

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А