AC/DC Power Modules

TMP Series, 7 to 30 Watt

CB Scheme

UL 60950-1

Features

- Ultra compact, low profile plastic case
- 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 85-264VAC, 50/60Hz
- Protection class II
- IEC/EN/UL 60950-1 Approval, CB-Report
- Short circuit and overload protection
- 3-year product warranty

The TMP series AC/DC Power Modules is a new range of fully encapsulated power supplies in an ultra-compact module. 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.

Single Output Models

Order code		Output power	Output
PCB-mount with solder pins	Chassis mount with screw terminal block	max.	
TMP 07103		4.6 W	3.3 VDC/1400 mA
TMP 07105		7 W	5.0 VDC/1400 mA
TMP 07112			12 VDC/585 mA
TMP 07115			15 VDC/465 mA
TMP 07124			24 VDC/290 mA
TMP 10103		6.6 W	3.3 VDC/2000 mA
TMP 10105		10 W	5.0 VDC/2000 mA
TMP 10112			12 VDC/830 mA
TMP 10115			15 VDC/665 mA
TMP 10124			24 VDC/415 mA
TMP 15105	TMP 15105C	15 W	5 VDC/3000 mA
TMP 15112	TMP 15112C		12 VDC/1250 mA
TMP 15115	TMP 15115C		15 VDC/1000 mA
TMP 15124	TMP 15124C		24 VDC/625 mA
TMP 15148	TMP 15148C		48 VDC/310 mA
TMP 30105	TMP 30105C	30 W	5 VDC/6000 mA
TMP 30112	TMP 30112C		12 VDC/2500 mA
TMP 30115	TMP 30115C		15 VDC/2000 mA
TMP 30124	TMP 30124C		24 VDC/1250 mA
TMP 30148	TMP 30148C		48 VDC/625 mA

Dual- and Triple Output Models

Order code		Output power max.	Output 1	Output 2	Output 3
PCB-mount with solder pins	chassis mount with screw terminal block				
TMP 15212	TMP 15212C	15 Watt	+12 VDC/650 mA	−12 VDC/650 mA	
TMP 15215	TMP 15215C		+15 VDC/500 mA	−15 VDC/500 mA	
TMP 15252	TMP 15252C		5.0 VDC/1500 mA	12 VDC/625 mA	
TMP 15512	TMP 15512C		5.0 VDC/2000 mA	+12 VDC/200 mA	−12 VDC/200 mA
TMP 15515	TMP 15515C		5.0 VDC/2000 mA	+15 VDC/150 mA	−15 VDC/150 mA
TMP 30212	TMP 30212C	30 Watt	+12 VDC/1300 mA	−12 VDC/1300 mA	
TMP 30215	TMP 30215C		+15 VDC/1000 mA	−15 VDC/1000 mA	
TMP 30252	TMP 30252C		5.0 VDC/3000 mA[1]	12 VDC/1250 mA[4]	
TMP 30512	TMP 30512C		5.0 VDC/3000 mA[1]	+12 VDC/600 mA[5]	−12 VDC/600 mA[5]
TMP 30515	TMP 30515C		5.0 VDC/3000 mA[1]	+15 VDC/500 mA[6]	−15 VDC/500 mA[6]
TMP 30522	TMP 30522C		5.0 VDC/3000 mA[1]	+12 VDC/1000 mA[7]	−12 VDC/250 mA[9]
TMP 30516	TMP 30516C		3.3 VDC/4000 mA[2]	+5.0 VDC/1500 mA[8]	+12 VDC/250 mA[9]
TMP 30517	TMP 30517C		5 VDC/4500 mA[3]	+3.3 VDC/1000 mA[7]	+12 VDC/250 mA[9]

Peak current: [1]4500 mA [2]5300 mA [3]6000 mA [4]1800 mA [5]900 mA [6]750 mA [7]1500 mA [8]2000 mA [9]500 mA
Total load not to exceed 30 Watt.

Input Specifications

Input voltage	– nominal		115 / 230 VAC
	– range		85 – 264 VAC 85 – 370 VDC
Input frequency			47 – 400 Hz
Input current at full load (115 VAC / 230 VAC)		4.6 W model:	110 mA / 75 mA typ
		6.6 & 7 W models:	150 mA / 100 mA typ.
		10 Watt models:	200 mA / 130 mA typ.
		30 watt models:	550 mA / 330 mA typ.
Input current at no load (115 VAC / 230 VAC)			15 mA / 20 mA typ.
Inrush current (< 2ms, cold start at 115 VAC / 230 VAC)		4.6 - 10 W models:	10 A / 20 A
		15 W model:	15 A / 30 A
		30 W model:	20 A / 40 A
External input fuse required (recommended value)			1.5 A slow blow

Output Specifications

Voltage set accuracy			±2% max.
Regulation	– Input variation		1% max.
	– Load variation	single output models (10–100%):	1% max.
		dual output models balanced load (10–100%):	2.5% max.
		dual output models unbalanced load (20/100%):	5.0% max.
		triple output models main output (10–100%):	1.0% max.
		triple output models auxillary outputs (10–100%):	4.0% max.
Minimum load		single an dual output models:	10% of rated max. current
		triple output models main output:	10% of rated max. current
		triple output models auxillary outputs:	20% of rated max. current (operation at lower load condition will not dam age these power supplies, however, they may not meet all listed specifications)

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

Output Specifications

Ripple and noise (20MHz bandwidth)	3.3 VDC & 5.0 VDC outputs:	1.8% of Vout [mVpk-pk max]
	other outputs:	1.3% of Vout [mVpk-pk max]
Overload protection by current limit		120% – 180% of Inom, fold back, automatic recovery (long term overload condition may cause damage to the unit)
Overvoltage protection by Zehner diode (main output only)		120% of Vout typ.
Capacitive load	TMP 07– 3.3 VDC & 5.0 VDC models:	2200 µF max.
	TMP 07– 12 VDC & 15 VDC models:	1000 µF max.
	TMP 07124 model:	680 µF max.
	TMP 10103 model:	3900 µF max.
	TMP 10105 model:	3300 µF max.
	TMP 10– 12 VDC & 15 VDC models:	2200 µF max.
	TMP 10– other models:	1000 µF max. (each output)
	TMP 15105 model:	3900 µF max.
	TMP 15– 12 VDC & 15 VDC models:	2200 µF max.
	TMP 15124 model:	1000 µF max.
	TMP 15148 model:	680 µF max.
	TMP 15– dual output models:	1500 µF max. (each output)
	TMP 15– triple output models, 5 VDC output:	2000 µF max.
	TMP 15– triple output models, other outputs:	1500 µF max.
	TMP 30105 model:	8000 µF max.
	TMP 30– 12 VDC & 15 VDC models:	3900 µF max.
	TMP 30124 model:	1500 µF max.
	TMP 30148 model:	1000 µF max.
	TMP 30– dual output models, 5VDC output:	3900 µF max.
	TMP 30– dual output models, other outputs:	1500 µF max.
	TMP 30– triple output models, 3.3 VDC & 5VDC outputs:	2200 µF max.
	TMP 30– triple output models, other outputs:	1500 µF max.
Rise time		200 ms typ.
Hold-up time		20 ms typ.

General Specifications

Temperature ranges	– Operating	–25 °C to +70 °C
	– Storage (non operating)	–40 °C to +85 °C
Power derating		3.75 %/K above +50 °C
Temperature coefficient		0.02 %/K
Humidity (non condensing)		95 % rel. H max.
Efficiency		75 % typ.
Switching frequency		100 kHz typ. (fixed)
Isolation voltage	– Input/Output	3'000 VAC
Isolation resistance	– Input/Output	100 MOhm (at 500 VDC)

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

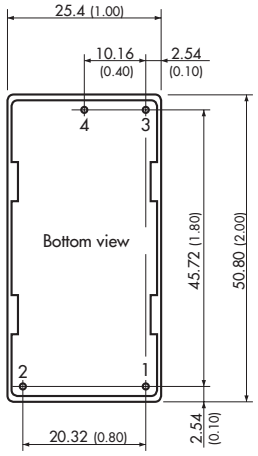
General Specifications

Electromagnetic compatibility (EMC), Emissions			EN 55022, level B, FCC Part 15 level B
Electromagnetic compatibility (EMC), Immunity			EN 61000-6-2
	– Electrostatic discharge ESD		EN 61000-4-2 8 kV/4 kV criteria B
	– RF field susceptibility		EN 61000-4-3 10 V/m criteria A
	– Electrical fast transient / burst immunity input		EN 61000-4-4 2 kV criteria B
	– Electrical fast transient / burst immunity output		EN 61000-4-4 2 kV criteria B
	– Surge immunity line – neutral		EN 61000-4-5, 1 kV criteria B
	– Surge immunity output		EN 61000-4-5 0.5 kV criteria B
	– Immunity to conducted RF disturbances		EN 61000-4-6 10 V criteria B
	– Mains voltage dips and interruptions		EN 61000-4-11 30 % /10 mS, 60 % /100 mS
EMC test certificates			www.tracopower.com/products/tmp-emc.pdf
Protection class II			to IEC 61140
Safety standards	– Information technology equipment		IEC/EN 60950-1, UL 60950-1
Safety approvals	– CB certificate for IEC 60950-1		www.tracopower.com/products/tmp-cb.pdf
	– UL approvals for UL 60950-1		www.ul.com -> certifications -> File: E188913
Reliability /calculated MTBF (MIL-HDBK-217F, ground benign)		TMP 07 models:	>330'000 h
		TMP 10 models:	>300'000 h
		TMP 15 models:	>280'000 h
		TMP 30 models:	>250'000 h
Case material			plastic resin + fiberglass (UL 94V-0 rated)

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

Outline Dimensions

TMP 07 models:

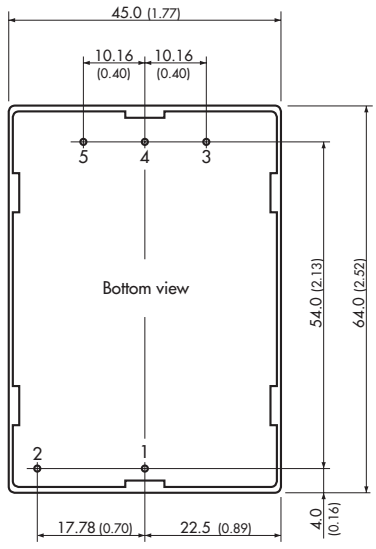


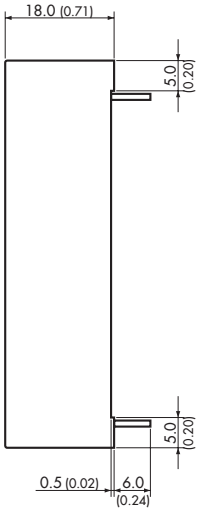
Pin-Out	
Pin	**Single**
1	AC (N)
2	AC (L)
3	+Vout
4	–Vout

Pin diameter: 1.0 (0.04)

Weight: 44 g (1.55 oz)

TMP 10 models





Pin-Out		
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)

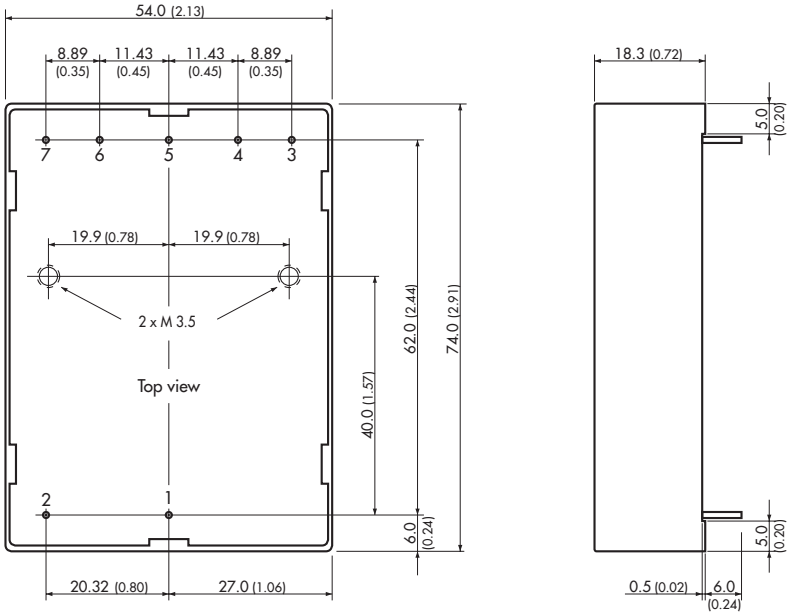
Pin diameter: 1.0 (0.04)

Weight: 92 g (3.25 oz)

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

Outline Dimensions

TMP 15 models for PCB mount:

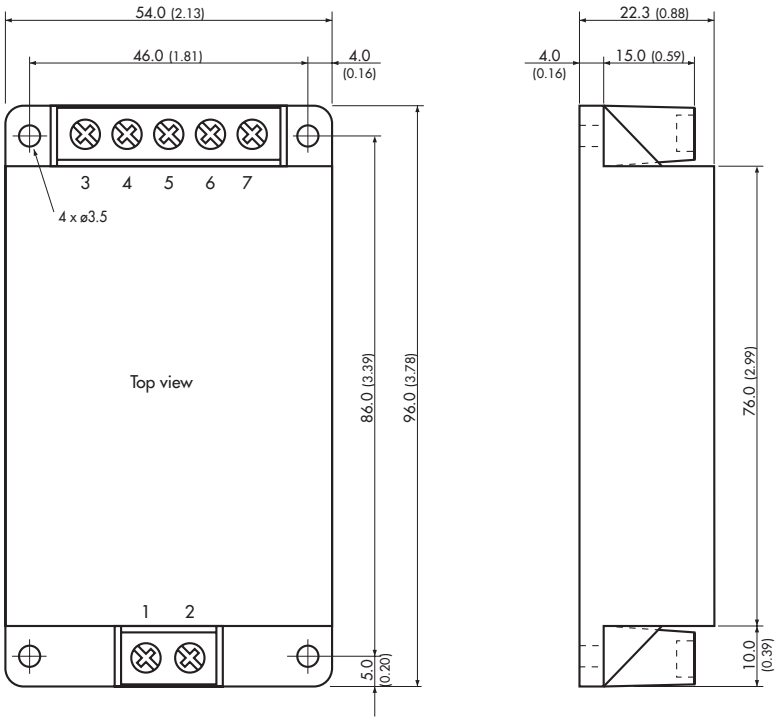


Pin-Out				
Pin	**Single**	**Dual sym.**	**Dual asym.**	**Triple**
1	AC (N)			
2	AC (L)			
3	no pin			Vout 3
4	–Vout	Vout 2	–Vout 2	com.2/3
5	no pin	com.1/2	+Vout 2	Vout 2
6	+Vout	Vout 1	–Vout 1	–Vout 1
7	no pin		+Vout 1	+Vout 1

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	not to connect			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	not to connect		+Vout 1	+Vout 1

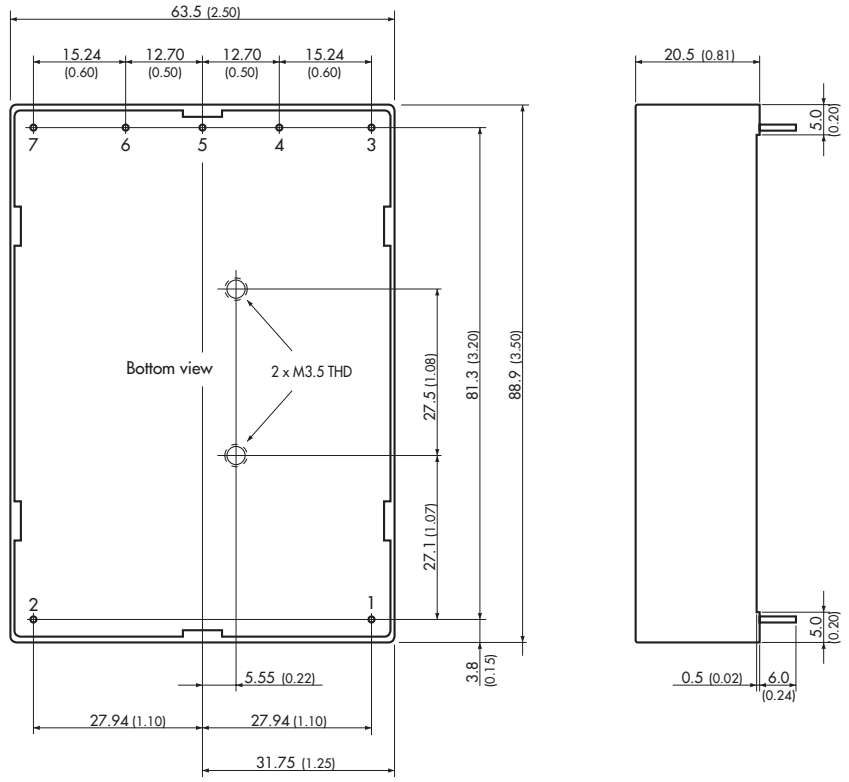
(ntc = not to connect)

Weight: 162 g (5.71 oz)

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

Outline Dimensions

TMP 30 models for PCB mount:



Pin diameter: 1.0 (0.04)
Weight: 177 g (6.24 oz)

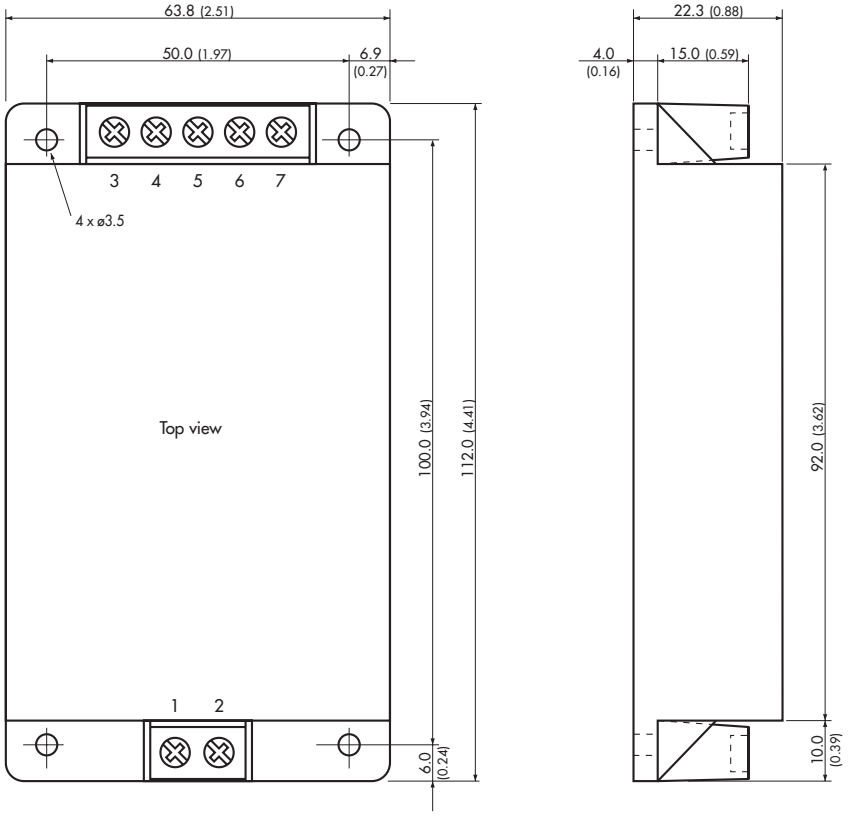
Pin-Out				
Pin	**Single**	**Dual sym.**	**Dual asym.**	**Triple**
1	AC (N)			
2	AC (L)			
3	+Vout	Vout 1	+Vout 2	Vout 2
4	no pin		+Vout 1	+Vout 1
5	–Vout	com.1/2	–Vout 2	com 2/3
6	no pin		–Vout 1	–Vout 1
7	ntc	Vout 2	ntc	Vout 3

(ntc = not to connect)

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

Outline Dimensions

TMP 30 models for chassis mount:



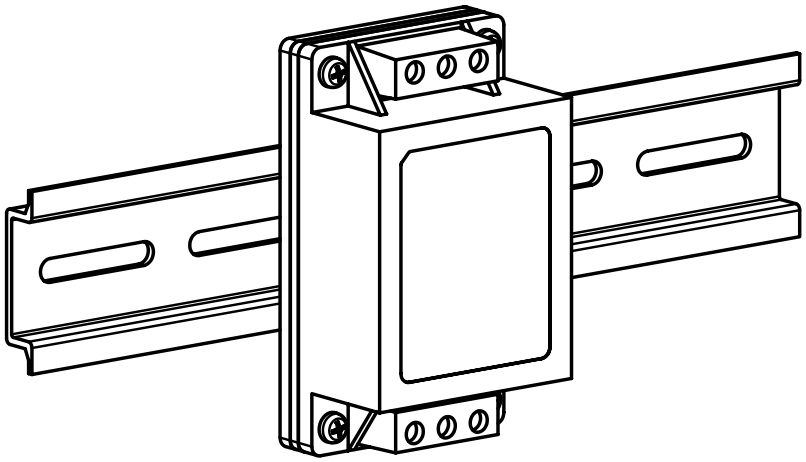
Weight: 191 g (6.74 oz)

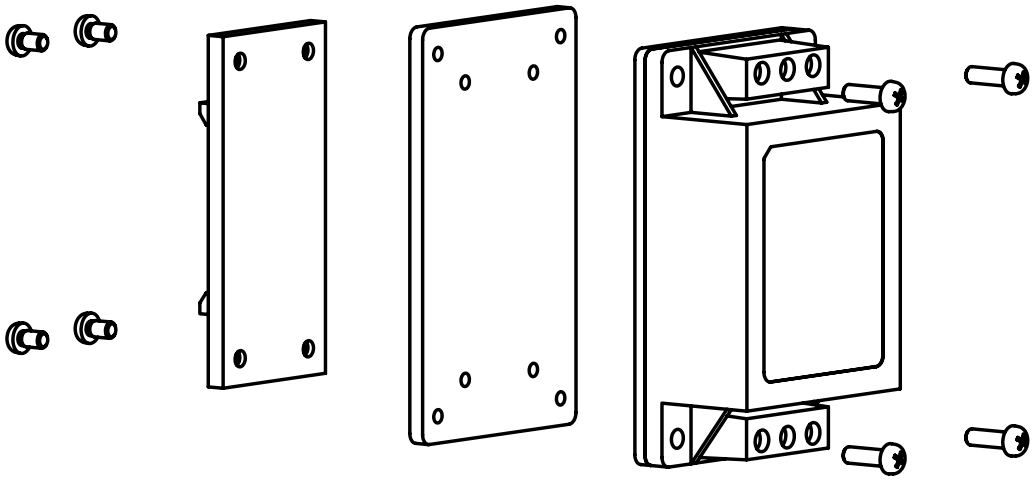
Connection				
Pin	**Single**	**Dual sym.**	**Dual asym.**	**Triple**
1	AC (N)			
2	AC (L)			
3	+Vout	Vout 1	+Vout 2	Vout 2
4	not to connect		+Vout 1	+Vout 1
5	–Vout	com.1/2	–Vout 2	com 2/3
6	not to connect		–Vout 1	–Vout 1
7	ntc	Vout 2	ntc	Vout 3

Dimensions in [mm], ( ) = Inches
Case tolerances: ±0.5 (0.02)
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

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

Specifications can be changed any time without notice.

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