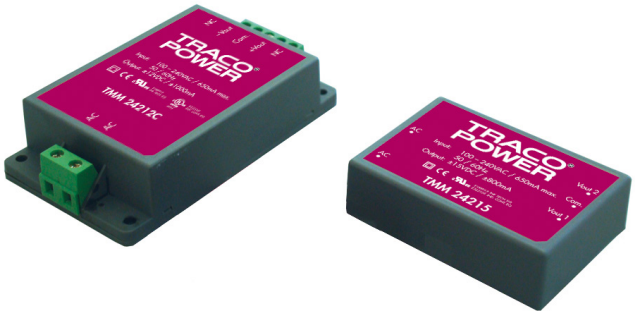
AC/DC Power Modules

TMM 24 Series, 24 Watt

UL 508 UL 60950-1 UL 60601-1 UL 60950-1 ES 60601-1

Features

- Fully encapsulated low profile plastic casing in PCB- or chassis mount version
- 2 x MOPP Medical safety according to AAMI/ANSI ES 60601-1:2005(R) and IEC/EN 60601-1 3rd edition
- IT and industrial safety according to IEC/EN/UL 60950-1 and UL 508
- Ready to meet ErP directive <0.3W no load power consumption
- -40°C start-up temperature
- Safety class II prepared
- Protection against over-temperature overload and short circuit
- 3-year product warranty



Also see:

TMM 40 Series, 40 Watt
www.tracopower.com/products/tmm40.pdf

TMM 60 Series, 60 Watt
www.tracopower.com/products/tmm60.pdf

The TMM 24 Series of fully encapsulated 24 Watt AC/DC power supply modules feature a reinforced/double I/O isolation system according to latest medical safety standards 60601-3 3rd edition for 2 x MOPP (Means Of Patient Protection). The high efficiency and the use of highest grade components make the units suitable for an operating temperature range of –40°C to +65°C while it goes up to 75°C with 50% load derating. EMI/EMC characteristics and the safety approval package qualify these modules not only for medical devices but also for demanding applications in transportation systems and for equipment in industrial an commercial environment.

24 Watt Models

Order code		Output power	Output 1	Output 2	Efficiency
PCB mount	Chassis mount	max.			
TMM 24105	TMM 24105C	15 W	5.0 VDC / 3000 mA		77 %
TMM 24112	TMM 24112C	24 W	12 VDC / 2000 mA		83 %
TMM 24115	TMM 24115C		15 VDC / 1600 mA		82 %
TMM 24124	TMM 24124C		24 VDC / 1000 mA		85 %
TMM 24212	TMM 24212C		+12 VDC / 1000 mA	–12 VDC / 1000 mA	84 %
TMM 24215	TMM 24215C		+15 VDC / 800 mA	–15 VDC / 800 mA	84 %

Input Specifications

Input voltage	– nominal – AC range (universal input) – DC range		100 – 240 VAC 85 – 264 VAC 120 – 370 VDC
Input frequency			47 – 440 Hz
Input current at full load (115 VAC / 230 VAC nominal input)		5.0 VDC model: other models:	285 mA / 170 mA typ. 425 mA / 255 mA typ
Leakage current			80 µA typ.
No-load power consumption			<0.3 W
Internal fuse			T2A 250VAC (both life and neutral)

Output Specifications

Voltage set accuracy			±2% typ.
Minimum load			no minimum load required
Regulation	– Input variation – Load variation (0-100%)	 single output models: dual output models:	0.5% typ. 0.5% typ. 2.5% typ.
Temperature coefficient			0.02 %/K
Ripple and noise (20 MHz bandwidth)		5.0 VDC model: other models:	1.8% of Vout [Vp-p] max. 1.3% of Vout [Vp-p] max.
Current limitation			above 105 % of rated output current. hiccup, auto recovery
Overvoltage protection by Zener diode (main output only)			120 % of Vout typ.
Short circuit protection			continuous, automatic recovery
Max. capacitive load		5.0 VDC model: 12 VDC model: 15 VDC model: 24 VDC model: ±12 VDC model: ±15 VDC model:	2200 µF 1000 µF 680 µF 480 µF 470 µF (each output) 330 µF (each output)

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

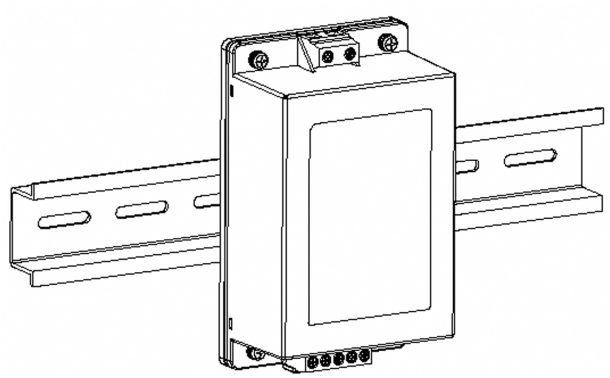
General Specifications

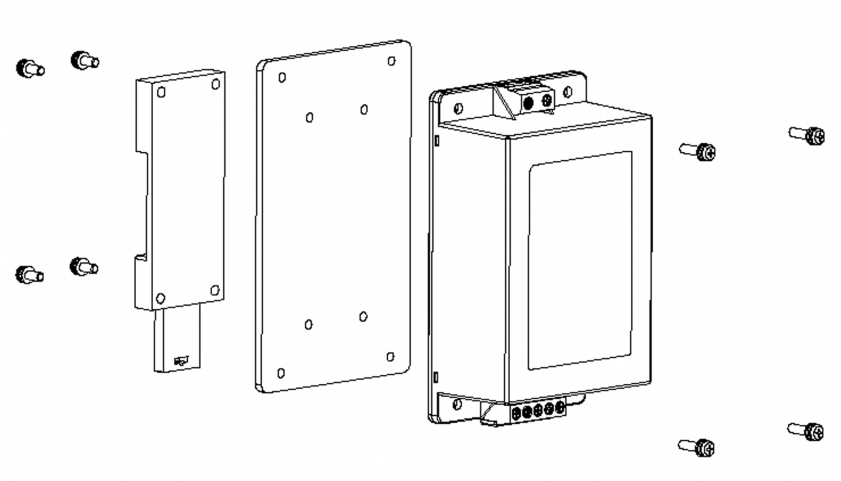
Temperature ranges	– Operating (natural convection cooling 20 LFM) – Power derating above +65°C – Storage (non operating)	–40°C to +80°C 5.0 %/K –40°C to +95°C
Over temperature protection	shutdown: automatic recovery:	above 90°C (142°C internal IC temperature) at approx 67°C
Humidity (non condensing)		95 % rel max.
Altitude during operation		5000 m
Switching frequency (pulse width modulation PWM)		132 kHz typ.
Hold-up time	115 VAC: 230 VAC:	20 ms typ. 80 ms typ.
Isolation voltage	– Input/Output	4'000 VAC
Isolation resistance	– at 500 VDC	1'000 MOhm
Reliability /calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)		>400'000 h
EMI / RFI conducted and radiated		EN 55022, class B, FCC part 15, level B EN 55011 class B
Electromagnets compatibility (EMC), immunity	– Electrostatic discharge ESD – RF field immunity – Electrical fast transients – Surge – Conducted RF – Magnetic field immunity – Voltage dip and interruptions (115 VAC / 60 Hz)	IEC / EN 61000-4-2, 8kV/4kV perf. criteria A IEC / EN 61000-4-3, 10V/m perf. criteria A IEC / EN 61000-4-4, ±2kV perf. criteria A IEC / EN 61000-4-5, ±1kV perf. criteria A IEC / EN 61000-4-6, 10 Vr.m.s perf. criteria A IEC / EN 61000-4-8, 30 A/m perf. criteria A IEC / EN 61000-4-11 30%,10ms perf. criteria A IEC / EN 61000-4-11 >95%, 5s perf. criteria B
Protection class II		acording IEC/EN 60536
Safety standards	– Certification documents	UL 60950-1, IEC/EN 60950-1, IEC 60601-1 3rd edition, 2 x MOPP ANSI/AAMI ES 60601-1:2005(R)2012 UL 508 for chassis mount version www.tracopower.com/overview/tmm24
Casing material		plastic resin (UL 94V-0 rated)
Environmental compliance	– Reach – RoHS	www.tracopower.com/products/reach-declaration.pdf RoHS directive 2011/65/EU

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

DIN-Rail Mounting Kit

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





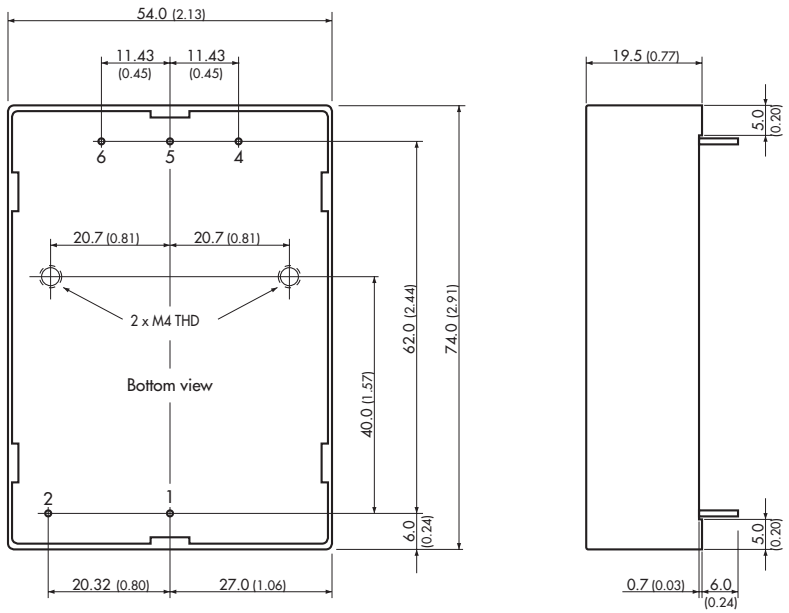
DIN-Rail Mounting Kit	
Order code	**For models**
TMP-MK1	TMM 24xxxC

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

Outline Dimensions

TMM 24:

for PCB mount:

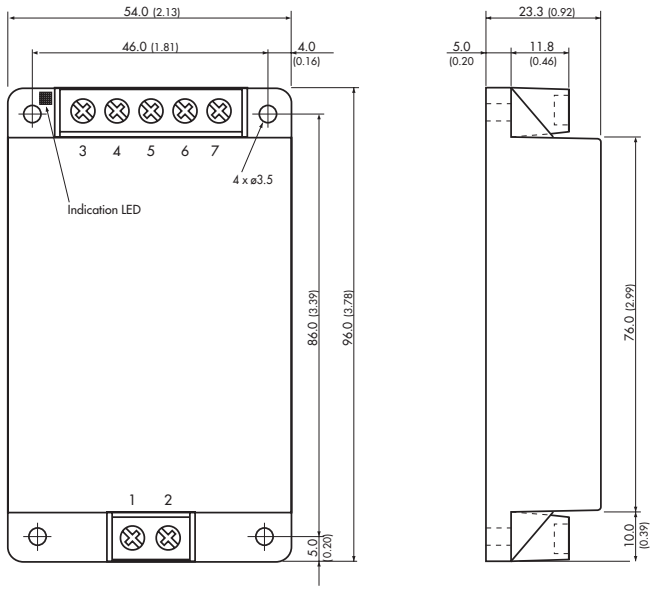


Weight: 137 g (4.83oz)

Pin diameter ø 1.0 mm (0.039)

TMM 24C:

for chassis mount:



Weight: 147 g (5.19oz)

Pinout / Connection		
Pin/con.	**Single**	**Dual**
1	AC (N)	AC (N)
2	AC (L)	AC(L)
3	No Pin / NC	No Pin / NC
4	–Vout	–Vout
5	No Pin / NC	Common
6	+Vout	+Vout
7	No Pin / NC	No Pin / NC

NC = not to connect

Dimensions in[mm], () = Inches
Tolerances = 0.5mm (0.02)
Pin diameter ø ±0.1 mm (0.004)