

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/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 24 Series, 24 Watt

www.tracopower.com/products/tmm24.pdf

TMM 60 Series, 60 Watt

www.tracopower.com/products/tmm60.pdf

The TMM 40 Series of fully encapsulated 40 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 +60°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 and commercial environment.

Models

Order code		Output power max.	Output 1	Output 2	Efficiency
PCB mount	Chassis mount				
TMM 40105	TMM 40105C	40 W	5.0 VDC / 8000 mA		83 %
TMM 40112	TMM 40112C		12 VDC / 3330 mA		83 %
TMM 40115	TMM 40115C		15 VDC / 2660 mA		83 %
TMM 40124	TMM 40124C		24 VDC / 1660 mA		84 %
TMM 40212	TMM 40212C		+12 VDC / 1660 mA	-12 VDC / 1660 mA	84 %
TMM 40215	TMM 40215C		+15 VDC / 1330 mA	-15 VDC / 1330 mA	84 %

Input Specifications

Input voltage ranges	– nominal	100 – 240 VAC
	– AC input	85 – 264 VAC
	– DC Input	120 – 370 VDC
Input frequency		47 – 440 Hz
Input current at full load (115 VAC / 230 VAC nominal input)		690 mA / 415 mA typ.
Leakage current		80 µA typ.
No-Load power consumption		<0.3 W
External input fuse required (recommended value)		3 A slow blow type or characteristic C

Output Specifications

Voltage set accuracy		±2% typ.
Minimum load		no minimum load required
Regulation	– Input variation	0.5% typ.
	– Load variation (0-100%)	single output models: 1.0% typ.
		dual output models: 2.0% typ.
Temperature coefficient		0.02 %/K
Ripple and noise (20 MHz bandwidth)	5.0 VDC model:	<1.8% of Vout [Vp-p] max.
	other models:	<1.3% of Vout [Vp-p] max.
Current limitation		above 105 % of rated output current. hicup, auto recovery
Overvoltage protection by Zehner diode (main output only)		120 % of Vout typ.
Short circuit protection		continuous
Max. capacitive load	5.0 VDC model:	8000 µF
	12 VDC model:	3900 µF
	15 VDC model:	3900 µF
	24 VDC model:	680 µF
	±12 VDC model:	1500 µF (each output)
	±15 VDC model:	1000 µF (each output)

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

General Specifications

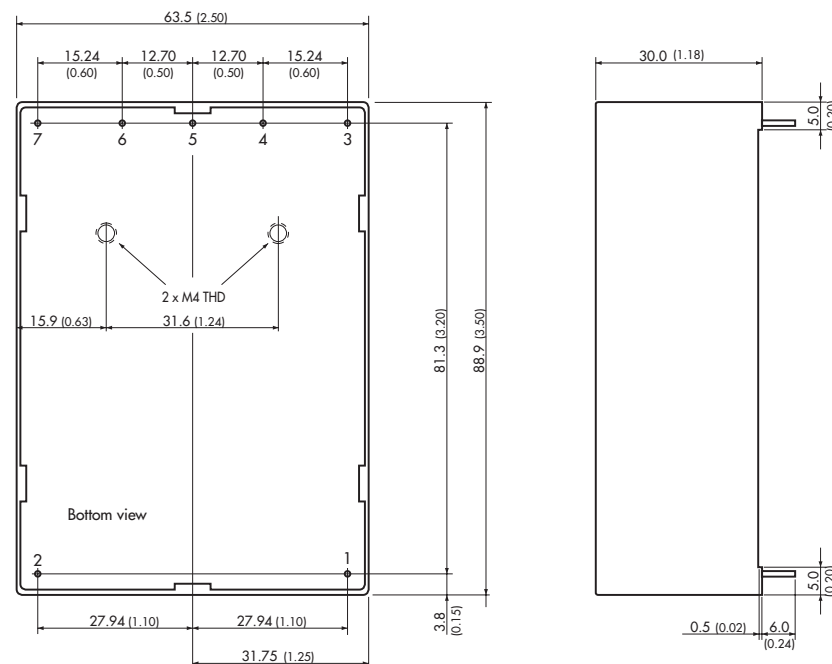
Temperature ranges	– Operating (natural convection cooling 20 LFM) – Power derating above +60°C – Storage (non operating)	–40°C to +80°C 3.75 %/K –40°C to +95°C
Over temperature protection	shutdown: automatic recovery:	at 90°C at approx 67°C
Humidity (non condensing)		95 % rel max.
Altitude during operation		5000 m
Switching frequency (pulse width modulation PWM)		130 kHz typ.
Hold-up time	115 VAC: 230 VAC:	25 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)		>200'000 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/burst immunity – Surge – Conducted RF – Magnetic field immunity	IEC / EN 61000-4-2, 8kV/4kV perf. criteria B IEC / EN 61000-4-3, 10V/m perf. criteria A IEC / EN 61000-4-4, ± 2kV perf. criteria B IEC / EN 61000-4-5, ± 1kV/± 2kV perf. criteria B IEC / EN 61000-4-6, 10 Vr.m.s perf. criteria B IEC / EN 61000-4-8, 30A/m perf. criteria A
Voltage dip and interruptions according to EN 61000-4-11 reference: 115 VAC / 60Hz		30%, 10ms perf. criteria B 60%, 100ms perf. criteria C 95%, 5000ms perf. criteria C
Protection class II		according IEC/EN 60536
Safety standards		UL 60950-1, IEC/EN 60950-1, IEC/EN 60601-1 3rd edition, 2 x MOPP ANSI/AAMI ES60601-1:2005(R)2012 UL 508 for chassis mount version
Safety approvals and certifications	– UL online certification (ES60601-1:2005(R)2012) – UL certificate (UL 60950-1) – UL approval for UL 508 (chassis mount models only) – CB certificate (60601-1 3rd edition 2 x MOPP) – CB certificate (IEC/EN 60950-1)	www.ul.com File e188913, copy: www.ul.com File e188913, copy: e188913qqqm2.pdf www.ul.com File e188913, copy: e188913qqqg2.pdf www.ul.com -> certifications -> File: e322109 www.tracopower.com/products/imm24-cb60601.pdf www.tracopower.com/products/imm24-cb60950.pdf
Casing material		plastic resin + fiberglass (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.

Outline Dimensions

TMM 40:

for PCB mount:

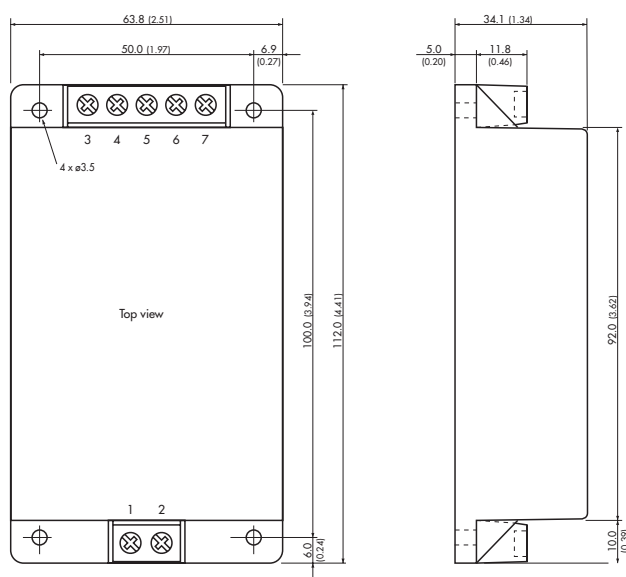


Pin diameter $\varnothing$ 1.0 mm (0.039)

Weight: 310 g (10.94oz)

TMM 40C:

for chassis mount:



Weight: 320 g (11.29oz)

Pinout / Connection

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

NC = not to connect

Dimensions in[mm], () = Inches

Tolerances = 0.5mm (0.02)

Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at www.tracopower.com