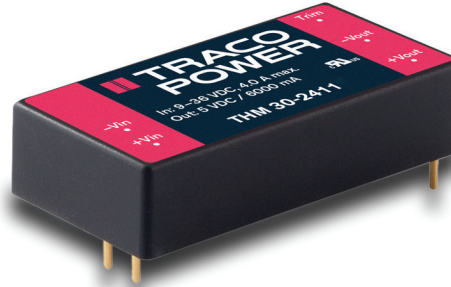


- 2.0 × 1.0 " plastic case
- Ultra wide 4:1 input voltage range
- I/O isolation 5000 VACrms rated for 250 VACrms working voltage
- Certification according to IEC/EN/ES 60601-1 3rd edition for 2×MOPP
- EMC compliance to IEC 60601-1-2 4th edition
- Risk management process according to ISO 14971 including risk management file
- Acceptance criteria for electronic assemblies according to IPC-A-610 Level 3
- Low leakage current <2.5 μA
- Extended operating temperature range -40°C to 80°C.
- Input filter to meet EN55022 class A
- Operating up to 5000 m altitude
- 5 year product warranty



The THM 30WI series is a range of medical 30 Watt DC/DC converters in 2.0" x 1.0" plastic package and with wide 4:1 input voltage range. They provide a reinforced isolation system for 5000 VACrms isolation and a very low leakage current of less than 2.5 μA. The units are approved to IEC/EN/ES 60601-1 3rd edition for 2 × MOPP (Means Of Patient Protection) and come along with an ISO 14971 risk management file. Design and production conform to the quality management system ISO 13485. With a high efficiency of up to 90% and highest grade components the converters can reliably operate in an ambient temperature range of -40°C up to +80°C. They constitute a reliable solution not only for medical equipment but also for demanding ranges of application such as transportation, control & measurement or IGBT drivers.

Models				
Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
THM 30-2411WI	9.0 – 36 VDC (24 VDC nominal)	5.0 VDC	6000 mA	88.0 %
THM 30-2412WI		12 VDC	2500 mA	89.0 %
THM 30-2413WI		15 VDC	2000 mA	89.0 %
THM 30-2415WI		24 VDC	1250 mA	89.0 %
THM 30-2421WI		±5 VDC	±3000 mA	86.0 %
THM 30-2422WI		±12 VDC	±1250 mA	89.0 %
THM 30-2423WI		±15 VDC	±1000 mA	89.0 %
THM 30-4811WI	18 – 75 VDC (48 VDC nominal)	5.0 VDC	6000 mA	89.0 %
THM 30-4812WI		12 VDC	2500 mA	89.0 %
THM 30-4813WI		15 VDC	2000 mA	89.0 %
THM 30-4815WI		24 VDC	1250 mA	89.0 %
THM 30-4821WI		±5 VDC	±3000 mA	86.5 %
THM 30-4822WI		±12 VDC	±1250 mA	90.0 %
THM 30-4823WI		±15 VDC	±1000 mA	89.5 %

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## Input Specifications

Input current no load	24 Vin models: 13 mA typ. 48 Vin models: 10 mA typ.
Surge voltage (3 s max.)	24 Vin models: 50 V max. 48 Vin models: 100 V max.
Start-up voltage	24 Vin models: 9 VDC (or lower) 48 Vin models: 18 VDC (or lower)
Startup time	60 ms max. (30 ms typ.)
Under voltage shut down (lock-out circuit)	24 Vin models: 7.8 - 8.6 VDC 48 Vin models: 15.8 - 17.4 VDC
Input filter	Pi-type
EML emission	EN 55011 limits to IEC 60601-1-2 4th edition EN55032 class A (internal filter) EN55032 class B with external components <a href="http://www.tracopower.com/overview/thm30wi">www.tracopower.com/overview/thm30wi</a> – Filter proposal
EMC immunity	– Generic for Medical equipment – ESD (electrostatic discharge)  – Radiated immunity – Fast transient / surge (with external input capacitor / diode)  – Conducted immunity – Magnetic field immunity  24 Vin models: Nippon chemi-con KY 220 µF/ 100 V TVS - SMDJ58A, 58V, 3000 W) 48 Vin models: Nippon chemi-con KY 220 µF/ 100 V TVS - SMDJ120A, 120V, 3000 W) EN 61000-1-2 4th edition EN 61000-4-2, air ±15 kV, contact ±8 kV, perf. criteria A EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±2 kV perf. criteria A EN 61000-4-6, 10 Vrms, perf. criteria A EN 61000-4-8 100 A/m, continuous, perf. criteria A 1000 A/m, 1 sec., perf. criteria A
External input fuse required (recommended values, slow blow type)	24 Vin models: 6.3 A 48 Vin models: 3.15 A

## Output Specifications

Voltage set accuracy	±1 % max.
Output voltage adjustment range (single output modes only)	5 & 12 VDC models: ±10% 15 & 24 VDC models: -10 / +20%
Regulation	– Input variation single output: 0.2 % max. dual output: 0.5 % max. – Load variation 0 – 100 % single output: 0.2 % max. dual output: 1.0 % max. – Cross regulation dual output: 5.0 % max. (asymmetrical load 25/100%)
Temperature coefficient	±0.02 %/K max.
Minimum load	not required
Ripple and noise (20 MHz Bandwidth)	(±)5.0 VDC models: 50 mVp-p typ. with cap. 10 µF/25V X7R MLCC (±)12 VDC models: 75 mVp-p typ. with cap. 10 µF/25V X7R MLCC ±15 VDC models: 75 mVp-p typ. with cap. 10 µF/25V X7R MLCC 15 VDC models: 100 mVp-p typ. with cap. 10 µF/25V X7R MLCC 24 VDC models: 100 mVp-p typ. with cap. 4.7 µF/50V X7R MLCC
Transient response	– Recovery time (25% load step change) 250 µs typ.
Overload protection	at 150 % typ. of lout rated (hiccup mode)
Short-circuit protection	Continuous, automatic recovery

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## General Specifications

Overvoltage protection	(±)5.0 VDC models: 6.2 VDC typ. (±)12 VDC models: 15 VDC typ. (±)15 VDC models: 20 VDC typ. 24 VDC models: 30 VDC typ.						
Capacitive load	<table border="0"> <tr> <td>–Single output</td> <td>5.0 VDC models: 7*200 µF max. 12 VDC models: 1*200 µF max. 15 VDC models: 1*000 µF max. 24 VDC models: 375 µF max.</td> </tr> <tr> <td>–Dual output</td> <td>±5 VDC models: 3*600 µF max. (each output) ±12 VDC models: 750 µF max. (each output) ±15 VDC models: 500 µF max. (each output)</td> </tr> </table>	–Single output	5.0 VDC models: 7*200 µF max. 12 VDC models: 1*200 µF max. 15 VDC models: 1*000 µF max. 24 VDC models: 375 µF max.	–Dual output	±5 VDC models: 3*600 µF max. (each output) ±12 VDC models: 750 µF max. (each output) ±15 VDC models: 500 µF max. (each output)		
–Single output	5.0 VDC models: 7*200 µF max. 12 VDC models: 1*200 µF max. 15 VDC models: 1*000 µF max. 24 VDC models: 375 µF max.						
–Dual output	±5 VDC models: 3*600 µF max. (each output) ±12 VDC models: 750 µF max. (each output) ±15 VDC models: 500 µF max. (each output)						
Temperature ranges	<table border="0"> <tr> <td>– Operating</td> <td>–40°C to +80°C</td> </tr> <tr> <td>– Case temperature</td> <td>+105°C max.</td> </tr> <tr> <td>– Storage temperature</td> <td>–55°C to +125°C</td> </tr> </table>	– Operating	–40°C to +80°C	– Case temperature	+105°C max.	– Storage temperature	–55°C to +125°C
– Operating	–40°C to +80°C						
– Case temperature	+105°C max.						
– Storage temperature	–55°C to +125°C						
Derating	(±)5 VDC models: 1.67% above 45°C other models: 2% above 55°C						
Overtemperature protection	at 115°C typ.						
Thermal impedance	12.85 °C/W						
Humidity (non condensing)	5 % to 95 % rel H max.						
Isolation voltage (50Hz, 60s)	5000 VACrms reinforced						
Clearance/creepage	8 mm min.						
Leakage current (at 240VAC, 60Hz)	2.5 µA max.						
Isolation capacitance (input/output)	20 pF typ.						
Altitude during operation	5000 m						
Reliability, calculated MTBF	tbd						
Switching frequency	250 kHz typ. (pulse width modulation)						
Vibration and thermal shock resistance	according to MIL-STD-810F						
Safety standards/approvals – Medical equipment	ANSI/AAMI ES 60601-1:2005/(R)2012, IEC/EN 60601-1 3rd edition <a href="http://www.tracopower.com/overview/thm30wi">www.tracopower.com/overview/thm30wi</a>						
– Certification documents							
Environmental compliance – Reach	<a href="http://www.tracopower.com/products/reach-declaration.pdf">www.tracopower.com/products/reach-declaration.pdf</a>						
– RoHS	RoHS directive 2011/65/EU						

## Physical Specifications

Casing material	non-conductive plastic
Base material	non-conductive plastic
Potting material	silicone (UL94 V-0 rated)
Package weight	32 g (1.13 oz)
Soldering temperature	max. 265°C / 10 s

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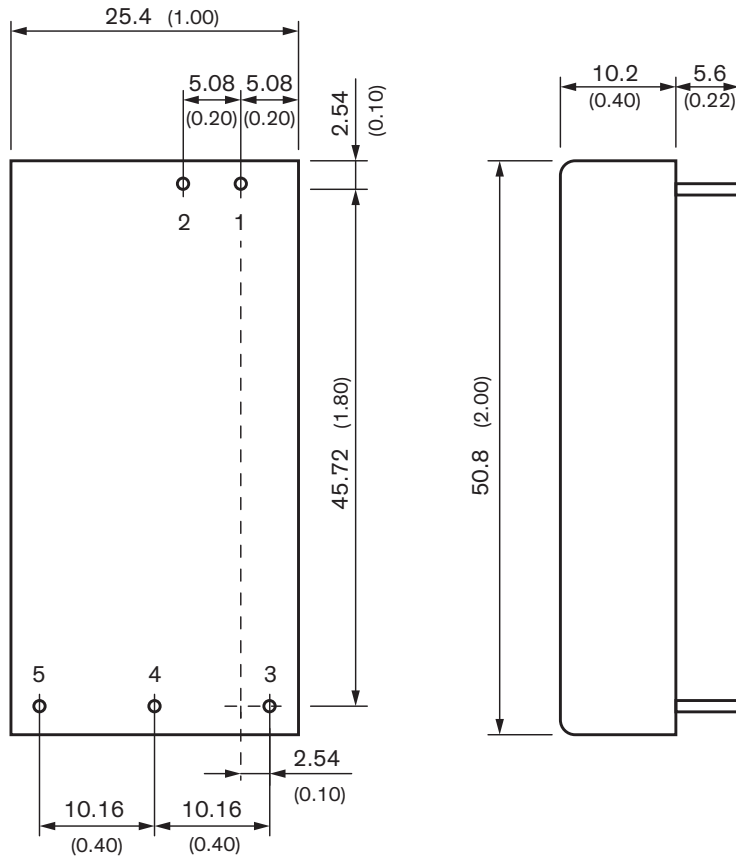


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# Outline Dimensions



Pinout		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	+Vout	+Vout
4	-Vout	Common
5	Trim	-Vout

Dimensions in [mm], ( ) = Inch  
 Tolerances  $\pm 0.5$  ( $\pm 0.02$ )  
 $\pm 0.25$  ( $\pm 0.01$ )  
 Pin pitch tolerances  $\pm 0.25$  ( $\pm 0.01$ )  
 Pin  $\varnothing$   $1.0 \pm 0.1$  ( $0.04 \pm 0.004$ )

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