

Features

- ◆ 3000VAC reinforced Insulation
- ◆ Insulation rated for 300VAC Working Voltage
- ◆ Medical Safety to UL/CSA/EN/IEC 60601-1 3rd Edition and 2 x MOOP
- ◆ Fully regulated Output Voltage
- ◆ Input filter meets EN 55022, class A and FCC, level A
- ◆ Operating Temp. Range -40°C to $+75^{\circ}\text{C}$
- ◆ Low leakage current
- ◆ Low coupling capacitance
- ◆ Short circuit protection
- ◆ 3-years product warranty



The TRACOPOWER THI-3 series is a new range of high isolation DC/DC converters with a reinforced insulation system. The I/O- isolation voltage is specified for 3000VACrms. The circuit is encapsulated in a DIP-24 package. There are 15 models available for 5, 12 and 24Vdc input voltage and single or dual output voltage. The THI-3 DC/DC converters offer a cost effective solution for applications in industrial controls and medical instrumentation requiring a certified supplementary or reinforced insulation system to comply with industrial or latest medical safety standards.

Models

Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
THI 3-0511	5.0 VDC \pm 10%	5 VDC	600 mA	60 %
THI 3-0512		12 VDC	250 mA	62 %
THI 3-0513		15 VDC	200 mA	62 %
THI 3-0522		\pm 12 VDC	\pm 125 mA	60 %
THI 3-0523		\pm 15 VDC	\pm 100mA	60 %
THI 3-1211	12.0 VDC \pm 10%	5 VDC	600 mA	60 %
THI 3-1212		12 VDC	250 mA	62 %
THI 3-1213		15 VDC	200 mA	62 %
THI 3-1222		\pm 12 VDC	\pm 125 mA	60 %
THI 3-1223		\pm 15 VDC	\pm 100 mA	60 %
THI 3-2411	24 VDC \pm 10%	5 VDC	600 mA	60 %
THI 3-2412		12 VDC	250 mA	64 %
THI 3-2413		15 VDC	200 mA	64 %
THI 3-2422		\pm 12 VDC	\pm 125 mA	60 %
THI 3-2423		\pm 15 VDC	\pm 100 mA	60 %

Input Specifications

Input current no load / full load	5 Vin models: 130 mA / 1000 mA typ. 12 Vin models: 60 mA / 420 mA typ. 24 Vin models: 40 mA / 210 mA typ.
Surge voltage (1 sec. max.)	5 Vin models: 7.5 V max. 12 Vin models: 15 V max. 24 Vin models: 30 V max.
Recommended input fuse (slow blow)	5 Vin models: 2 A 12 Vin models: 1 A 24 Vin models: 0.5 A
Input filter	Pi-Filter
Conducted noise	EN 55022, class A and FCC level A

Output Specifications

Voltage set accuracy	±4 %
Voltage balance (dual output models)	4 % max.
Regulation	- Input variation 0.5 % - Load variation 10–100% 1.0 % max.
Min. Load	No minimum load required
Ripple and noise (20 MHz Bandwidth)	50 mVpk-pk max.
Temperature coefficient	±0.02 %/K
Short circuit protection	continuous (automatic recovery)
Capacitive load	single output models: 470 µF max. dual output models: 220 µF max. (each output)

General Specifications

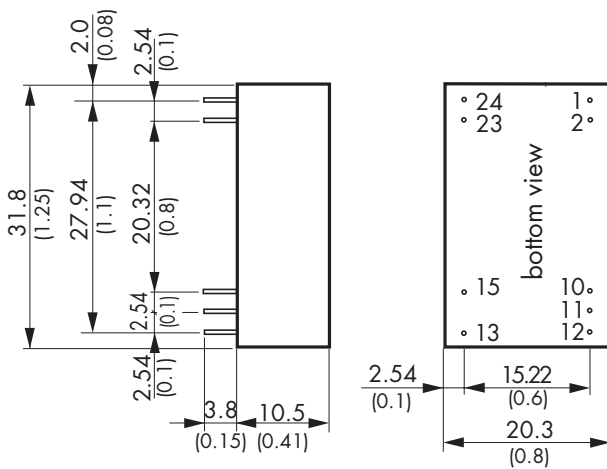
Temperature ranges	- Operating -40°C to +75°C - Case temperature +95°C max. - Storage -50°C to +125°C
Derating	3 %/K above 60°C
Humidity (non condensing)	95 % rel. H max.
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)	>1 Mio h
Isolation voltage	- I/O Isolation voltage (60 sec.) 3'000 VACrms - Isolation test voltage (1 sec. flash test) 4'500 Vpk
Isolation capacitance	- Input/Output 20 pF typ.
Isolation resistance	- Input/Output >10 Gohm (at 500 VDC)
Pri-Sec Leakage current (at 240VAC, 60Hz)	2 µA
Safety standards	cUL/UL 60950-1, CSA C22.2 No. 60950-1-03 UL 60601-1, CSA C22.2 No. 601-1 IEC/EN 60950-1, IEC/EN 60601-1 3rd edition, 2 x MOOP
Safety approvals	- CB report according IEC 60950-1 www.tracopower.com/products/thi3-cb.pdf - UL certificate according UL 60601-1 www.tracopower.com/products/thi3-ul.pdf
Switching frequency	25 – 60 kHz (PFM)
Environmental compliance	- Reach www.tracopower.com/products/thi3-reach.pdf - RoHS RoHS directive 2011/65/EU

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

General Specifications

Casing material	plastic (UL 94V-0 rated)
Pin Material	Copper Alloy with gold plated Nickel over subplate
Weight	12.4 g (0.44 oz)
Soldering temperature	max. 260°C / 10 sec

Outline Dimensions



Pin-Out		
Pin	Single	Dual
1	+Vin (VCC)	+Vin (VCC)
2	+Vin (VCC)	+Vin (VCC)
10	No pin	Common
11	No pin	Common
12	-Vout	No pin.
13	+Vout	-Vout
15	No pin	+Vout
23	-Vin (GND)	-Vin (GND)
24	-Vin (GND)	-Vin (GND)

Dimensions in [mm], () = Inch
Tolerances: ± 0.25 (± 0.01)
Pin diameter: $\varnothing 0.5 \pm 0.05$ (0.02 ± 0.002)
Pin pitch tolerances: ± 0.13 (± 0.005)