

Features

- ◆ Smallest encapsulated 15W Converter!
Ultra compact size: 1.0" x 1.0" x 0.4"
- ◆ Shielded metal case with isolated baseplate
- ◆ Ultrawide 4:1 input ranges 9-36 VDC or 18-75VDC
- ◆ Output voltage Trim
- ◆ I/O isolation voltage 1500 VDC
- ◆ Very high efficiency up to 87%
- ◆ Operating temp. range : -40°C to +85°C
- ◆ Remote On/Off control
- ◆ Industry standard pinout
- ◆ 3-year product warranty



The THN-15WI series is the latest generation of high performance dc-dc converter modules setting new standards concerning power density. This product with 15W comes in a encapsulated, shielded metal package with dimensions of only 1.0"x 1.0"x 0.4" and occupies 50% (!) less board space.

All models have ultra wide 4:1 input voltage range and precisely regulated output voltages. Advanced circuit design provides high efficiency up to 87% which allows a operating temperature range of -40°C to +85°C (with derating) Further features include remote On/Off and trimmable output. Typical applications for these converters are battery operated equipment, mobile instrumentation, distributed power architectures in communication and industrial electronics and everywhere where space on PCB is critical.

Models

Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
THN 15-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	4'000 mA	86 %
THN 15-2411WI		5.0 VDC	3'000 mA	86 %
THN 15-2412WI		12 VDC	1'300 mA	87 %
THN 15-2413WI		15 VDC	1'000 mA	87 %
THN 15-2415WI		24 VDC	625 mA	90 %
THN 15-2421WI		±5 VDC	±1'500 mA	85 %
THN 15-2422WI		±12 VDC	±625 mA	87 %
THN 15-2423WI		±15 VDC	±500 mA	88 %
THN 15-2425WI		±24 VDC (48 VDC)*	±315 mA	91 %
THN 15-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	4'000 mA	86 %
THN 15-4811WI		5.0 VDC	3'000 mA	87 %
THN 15-4812WI		12 VDC	1'300 mA	87 %
THN 15-4813WI		15 VDC	1'000 mA	87 %
THN 15-4815WI		24 VDC	625 mA	91 %
THN 15-4821WI		±5 VDC	±1'500 mA	85 %
THN 15-4822WI		±12 VDC	±625 mA	86 %
THN 15-4823WI		±15 VDC	±500 mA	87 %
THN 15-4825WI		±24 VDC (48 VDC)*	±315 mA	90 %

* The outputs can also be used in serial circuit for single 48 VDC operation.

Input Specifications

Input current at no load	– 24 Vin	3.3 VDC models: 45 mA typ. 5 VDC models: 70 mA typ. 24 VDC models: 12 mA typ. ±24 VDC models: 15 mA typ. other models: 20 mA typ.
	– 48 Vin	3.3 VDC models: 25 mA typ. 5 VDC models: 35 mA typ. 12, 15 & ±5 VDC models: 12 mA typ. ±12 VDC models: 15 mA typ. ±15 VDC models: 20 mA typ. 24 & ±24 VDC models: 10 mA typ.
Start-up voltage / under voltage shut down		24 Vin models: 9 VDC /8 VDC 48 Vin models: 18 VDC /16 VDC
Surge voltage (100 msec. max.)		24 Vin models: 50 V max. 48 Vin models: 100 V max.
Reflected input ripple current		30 mA typ.
Conducted noise		EN 55022 class A and B with external components
ESD (electrostatic discharge)		EN 61000-4-2, air ±8 kV, contact ±6 kV, perf. criteria A
Radiated immunity		EN 61000-4-3, 10 V/m, perf. criteria A
Fast transient / surge (with external input capacitor)		EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±1 kV perf. criteria A Nippon chemi-con KY 220 µF, 100 V
– external input capacitor		
Conducted immunity		EN 61000-4-6, 3 Vrms, perf. criteria A

Output Specifications

Voltage set accuracy		±1 %
Output voltage adjustment range		24 Vin models: –10 / +20 % all other models: ±10 % only for single output models see application note.
Regulation	– Input variation (Vmin – Vmax)	single output models: 0.2 % max. dual output models: 0.5 % max.
	– Load variation (0 – 100 %)	single output models: 0.2 % max. dual output models balanced load: 1.0 % max. dual output models unbalanced load (25% /100%): 5.0 % max.
Minimum load		not required
Ripple and noise (20 MHz bandwidth)		3.3/5.0 VDC models: 75 mVpk-pk with external capacitor all other models: 100 mVpk-pk max. with external capacitor see application note.
Temperature coefficient		±0.02 %/K
Output current limitation		typ. 150 % of Iout max., Hiccup
Short circuit protection		continuous, automatic recovery
Over voltage protection		3.3 VDC models: 3.7 – 5.4 Vout 5 VDC models: 5.6 – 7.0 Vout 12 VDC models: 13.5 – 19.6 Vout 15 VDC models: 16.8 – 20.5 Vout 24 VDC models: 29.1 – 32.5 Vout
Start up time (nominal Vin and constant resistive load)		30 ms typ. (for power on and remote on)
Transient response setting time (25% load step change)		250 µs typ.

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

Output Specifications

Max. capacitive load	3.3 VDC models:	12'000 µF
	5 VDC models:	6'000 µF
	12 VDC models:	1'000 µF
	15 VDC models:	660 µF
	24 VDC models:	200 µF
	±5 VDC models:	±3'000 µF
	±12 VDC models:	±520 µF
	±15 VDC models:	±330 µF
	±24 VDC models:	±100 µF

General Specifications

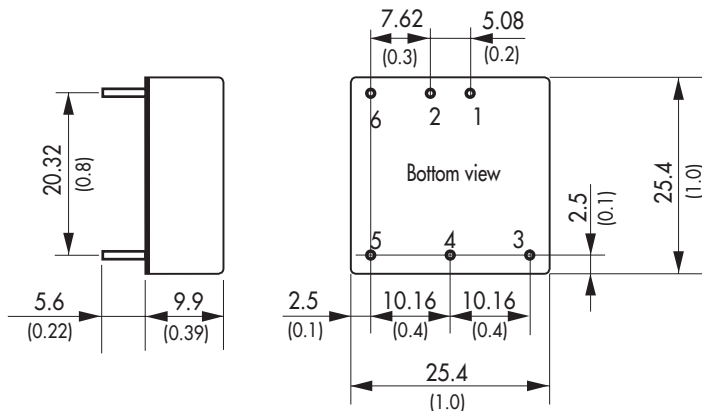
Temperature ranges	– Operating	–40°C to +85°C (with derating)
	– Casing	+105°C max.
	– Storage	–55°C to +125°C
Power derating		2.2 %/K above 60°C
Thermal impedance	– Natural convection	18.2°C/W
	– Natural convection with heat-sink	15.8°C/W
Humidity (non condensing)		5 % to 95 % rel H max.
Reliability, calculated MTBF (MIL-HDBK-217F, at +25°C, ground benign)		>1.4 Mio. h
Isolation voltage (60 sec.)	– Input/Output	1'600 VDC
Isolation capacitance	– Input/Output	1000 pF typ.
Isolation resistance	– Input/Output (500 VDC)	>1'000 MOhm
Remote On/Off	– On:	3.0 ... 15 VDC or open circuit
	– Off:	0 ... 1.2 VDC or short circuit pin 6 and pin 2
	– Off idle current:	2.5 mA
Switching frequency (fixed)		400 kHz typ. (pulse width modulation PWM)
Vibration and thermal shock		MIL-STD-810F
Safety standards		UL/cUL 60950-1, EN 60950-1, IEC 60950-1
	– Certification documents	www.tracopower.com/overview/thn15wi
Environmental compliance	– Reach	www.tracopower.com/overview/thn15wi
	– RoHS	RoHS directive 2011/65/EU

Physical Specifications

Casing material	nickel coated copper
Baseplate	non conductive FR4
Potting material	epoxy (UL 94V-0 rated)
Weight	15 g (0.53oz)
Soldering temperature	max. 265°C / 10sec.

Application note: www.tracopower.com/products/thn15wi-application.pdf

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

Outline Dimensions mm (inches)

***Optional versions:**

- without remote and trim pins add suffix **-B** (e.g. THN 15-2412WI-B)
- without remote pin add suffix **-B1** (e.g. THN 15-2413WI-B1)
- without trim pin add suffix **-B2** (e.g. THN 15-4811WI-B2)

Pin-Out		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	+ Vout	+ Vout
4	Trim	Common
5	-Vout	-Vout
6	Remote On/Off	

Dimensions in [mm], () = Inch

Pin diameter $\varnothing$ 1.0 (0.04)

Pin pitch tolerances: ± 0.25 (± 0.01)

Tolerances: ± 0.5 (± 0.02)

Heat-Sink (Option)
Order code: THN-HS1

(cont.: heat-sink, thermal pad, 2 clamps)

Material: Aluminum

Finish: Anodic treatment (black)

Weight: 8 g (0.28oz) without converter

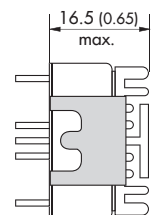
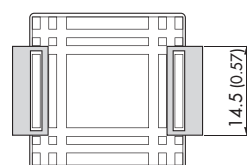
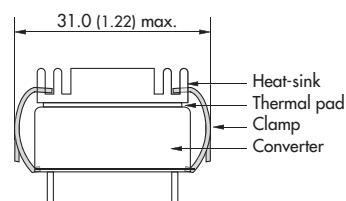
Thermal impedance after assembling: 15.8 K/W


Note:

The product label on converter has to be removed before mounting the heat-sink.

For volume orders converters will be supplied with heat-sink already mounted. Please contact factory for quotation.

Separate heat-sinks are only available for prototypes and small quantity orders.



Dimensions in mm, () = Inch

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

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