

### 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<br>(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 15-2421WI |                                | ±5 VDC                          | ±1'500 mA           | 85 %            |
| THN 15-2422WI |                                | ±12 VDC                         | ±625 mA             | 87 %            |
| THN 15-2423WI |                                | ±15 VDC                         | ±500 mA             | 88 %            |
| THN 15-4810WI |                                | 18 – 75 VDC<br>(48 VDC nominal) | 3.3 VDC             | 4'000 mA        |
| THN 15-4811WI | 5.0 VDC                        |                                 | 3'000 mA            | 86 %            |
| THN 15-4812WI | 12 VDC                         |                                 | 1'300 mA            | 87 %            |
| THN 15-4813WI | 15 VDC                         |                                 | 1'000 mA            | 87 %            |
| 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 %            |

### Input Specifications

|   |   |
|---|---|
| Input current at no load                      | 24 Vin; 3.3 VDC models: 50 mA typ.<br>24 Vin; 5 VDC models: 70 mA typ..<br>24 Vin; other models: 20 mA typ.<br>48 Vin; 3.3 & 5 VDC models: 40 mA typ.<br>48 Vin; other models: 15 mA typ. |
| Input current at full load                    | 24 Vin; 3.3 VDC models: 690 mA typ.<br>24 Vin; other models: 770 mA typ..<br>48 Vin; 3.3 VDC models: 340 mA typ.<br>48 Vin; other models: 380 mA typ.                                     |
| Start-up voltage /<br>under voltage shut down | 24 Vin models: 9 VDC /8 VDC<br>48 Vin models: 18 VDC /16 VDC  |
| Surge voltage<br>(100 msec. max.)             | 24 Vin models: 50 V max.<br>48 Vin models: 100 V max.   |
| Reflected input ripple current                | 30 mA typ.  |
| Conducted noise (input)                       | EN 55022 level A, FCC part 15, level A<br>with external capacitor<br><a href="#">see application note.</a>  |

### Output Specifications

|   |   |
|---|---|
| Voltage set accuracy                                    | ±1 %  |
| Output voltage adj. range                               | ±10 % only for single output models.<br><a href="#">see application note.</a>   |
| Regulation  | – Input variation (Vmin – Vmax) single output models: 0.2 % max.<br>dual output models: 0.5 % max.<br>– Load variation (0 – 100 %) single output models: 0.2 % max.<br>dual output models balanced load: 1.0 % max.<br>dual output models unbalanced load (25% /100%): 5.0 % max. |
| Minimum load  | not required  |
| Ripple and noise (20 MHz bandwidth)                     | 100 mVpk-pk max. with external capacitor<br><a href="#">see application note.</a>   |
| Temperature coefficient                                 | ±0.02 %/K   |
| Output current limitation                               | at 150 % of Iout max., foldback   |
| Short circuit protection                                | indefinite (automatic recovery)   |
| Over voltage protection                                 | 3.3 VDC models: 3.7 – 5.4 Vout<br>5 VDC models: 5.6 – 7.0 Vout<br>12 VDC models: 13.5 – 19.6 Vout<br>15 VDC models: 16.8 – 20.5 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.   |
| Max. capacitive load                                    | 3.3 VDC models: 12'000 µF<br>5 VDC models: 6'000 µF<br>12 VDC models: 1'000 µF<br>15 VDC models: 660 µF<br>±5 VDC models: ±3'000 µF<br>±12 VDC models: ±520 µF<br>±15 VDC models: ±330 µF   |

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

### General Specifications

|   |   |  |
|---|---|--|
| Temperature ranges  | <ul style="list-style-type: none"> <li>- Operating</li> <li>- Casing</li> <li>- Storage</li> </ul>                  | -40°C to +85°C (with derating)<br>+105°C max.<br>-55°C to +125°C   |
| Power derating  |   | 2.2 %/K above 60°C   |
| Thermal impedance   | <ul style="list-style-type: none"> <li>- Natural convection</li> <li>- Natural convection with heat-sink</li> </ul> | 18.2°C/W<br>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   | <ul style="list-style-type: none"> <li>- On:</li> <li>- Off:</li> <li>- Off idle current:</li> </ul>                | 3.0 ... 15 VDC or open circuit<br>0 ... 1.2 VDC or short circuit pin 6 and pin 2<br>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  |
| Safety approvals  | <ul style="list-style-type: none"> <li>- CB test report (IEC 60950-1)</li> <li>- UL/cUL</li> </ul>                  | <a href="http://www.tracopower.com/products/thn15wi-cb.pdf">www.tracopower.com/products/thn15wi-cb.pdf</a><br><a href="http://www.ul.com">www.ul.com</a> -> certifications -> File e188913 |
| Environmental compliance  | <ul style="list-style-type: none"> <li>- Reach</li> <li>- RoHS</li> </ul>   | <a href="http://www.tracopower.com/products/reach-declaration.pdf">www.tracopower.com/products/reach-declaration.pdf</a><br>RoHS directive 2011/65/EU                                      |

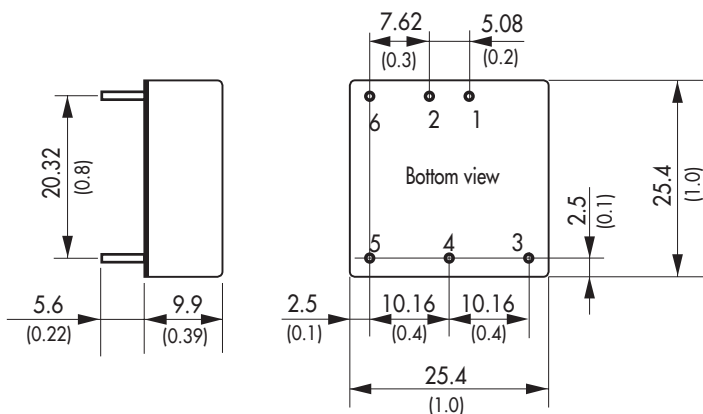
### Physical Specifications

|                       |                        |
|-----------------------|------------------------|
| 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](http://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)**



| 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 |            |

**\*Optional versions:**

- without remote and trim pins add suffix **-B** (e.g. TEN 25-2412WI-B)
- without remote pin add suffix **-B1** (e.g. TEN 25-2413WI-B1)
- without trim pin add suffix **-B2** (e.g. TEN-25-4811WI-B2)

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

**Heat-Sink (Option)**

**Order code: THN-HS1**

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

**Material:** Aluminum

**Finish:** Anodic treatment (black)

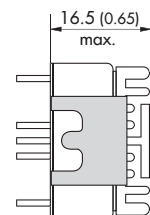
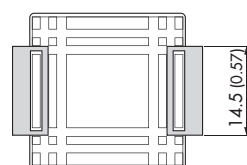
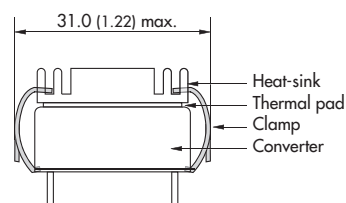
**Weight:** 8 g (0.28oz) without converter

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](http://www.tracopower.com)



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#### Как с нами связаться

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