



**THE DATASHEET OF  
THL 10-2410WI**



### Features

- 10 Watt in 1" x 1" package
- Shielded metal case with isolated baseplate
- Ultrawide 4:1 input voltage ranges
- Remote On/Off control
- Operating temp. range  $-40^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$  and up to  $+85^{\circ}\text{C}$  with heat-sink
- I/O isolation voltage 1500 VDC
- Input filter meets EN 55022 class A without external components
- Cost optimized design
- Industry standard pinout
- 3-year product warranty



The THL 10WI is a series of general purpose 10 Watt dc/dc-converters packed in the compact 1" x 1" case and is a pin to pin replacement for the popular 1" x 2" size products. The industrial standard pinout, the ultra wide 4:1 input voltage range and the input filter that meets EN 55022 Class A without external components make these converters easy to design in and suitable for to cost optimize many existing and new applications.

The models have a remote On/Off control, short circuit and overvoltage protection and are applicable in temperature ranges of up to  $+75^{\circ}\text{C}$  or  $+85^{\circ}\text{C}$  with optional mounted heat sink. Typical applications are instrumentation, distributed power architectures in communication and industrial electronics.

### Models

Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
THL 10-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	2200 mA	86 %
THL 10-2411WI		5.1 VDC	2000 mA	84 %
THL 10-2412WI		12 VDC	830 mA	86 %
THL 10-2413WI		15 VDC	660 mA	87 %
THL 10-2415WI		24 VDC	410 mA	86 %
THL 10-2421WI		$\pm 5.0$ VDC	$\pm 1000$ mA	84 %
THL 10-2422WI		$\pm 12$ VDC	$\pm 410$ mA	86 %
THL 10-2423WI		$\pm 15$ VDC	$\pm 330$ mA	87 %
THL 10-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	2200 mA	85 %
THL 10-4811WI		5.1 VDC	2000 mA	84 %
THL 10-4812WI		12 VDC	830 mA	86 %
THL 10-4813WI		15 VDC	660 mA	87 %
THL 10-4815WI		24 VDC	410 mA	86 %
THL 10-4821WI		$\pm 5.0$ VDC	$\pm 1000$ mA	84 %
THL 10-4822WI		$\pm 12$ VDC	$\pm 410$ mA	86 %
THL 10-4823WI		$\pm 15$ VDC	$\pm 330$ mA	87 %

### Input Specifications

<b>Input current at no load</b> (at nominal input voltage)	24 V models: <b>30 mA typ.</b> 48 V models: <b>20 mA typ.</b>
<b>Input current at full load</b> (at nominal input voltage)	24 V; 3.3 VDC models: <b>400 mA typ.</b> 24 V; other models: <b>500 mA typ..</b> 48 V; 3.3 VDC models: <b>200 mA typ.</b> 48 V; other models: <b>250 mA typ.</b>
<b>Start-up voltage / under voltage lockout</b> (hysteresis for assertive on)	24 V models: <b>9 VDC / 8.5 VDC</b> (or lower) 48 V models: <b>18 VDC / 17 VDC</b> (or lower) (long term operation at undervoltage will damage the converter!)
<b>Surge voltage</b> (1 sec. max.)	24 Vin models: <b>50 V max.</b> 48 Vin models: <b>100 V max.</b>
<b>Conducted noise</b> (input)	<b>EN 55022 class A, FCC part 15, level A</b> <b>without external components</b>
<b>Recommended input fuse</b> (slow blow)	24 V models: <b>2000 mA</b> 48 V models: <b>1000 mA</b>

### Output Specifications

<b>Voltage set accuracy</b>	<b>±2 %</b>
<b>Regulation</b>	<ul style="list-style-type: none"> <li>- Input variation (Vmin – Vmax)</li> <li>- Load variation</li> </ul>
	<b>1.0 % max.</b> single output models: <b>1.2 % max.</b> (15 – 100 % load) dual output models: <b>2.0 % max.</b> (15 – 100 % balanced load)
<b>Minimum load</b>	<b>15 %</b>
<b>Ripple and noise</b> (20 MHz bandwidth)	<b>60 mVp-p typ.</b>
<b>Temperature coefficient</b>	<b>±0.02 %/K</b>
<b>Output current limitation</b>	<b>&gt;110 % of Iout max.</b>
<b>Short circuit protection</b>	<b>indefinite, automatic recovery</b>
<b>Transient response setting time</b>	<b>300 µs typ.</b> (25 % load step change)
<b>Maximum capacitive load</b>	3.3 VDC models: <b>560 µF</b> 5 VDC models: <b>560 µF</b> 12 VDC models: <b>150 µF</b> 15 VDC models: <b>150 µF</b> 24 VDC models: <b>68 µF</b> ±5.0 VDC models: <b>220 µF</b> (each output) ±12 VDC models: <b>100 µF</b> (each output) ±15 VDC models: <b>100 µF</b> (each output)

### General Specifications

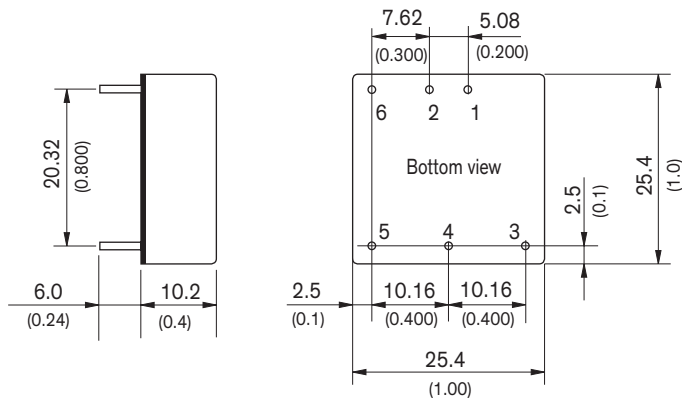
<b>Temperature ranges</b>	<ul style="list-style-type: none"> <li>- Operating without heat sink</li> <li>- Operating with heat sink</li> <li>- Case temperature</li> <li>- Storage</li> </ul>	<ul style="list-style-type: none"> <li>-40°C to +75°C (with derating)</li> <li>-40°C to +85°C (with derating)</li> <li>+100°C max.</li> <li>-40°C to +125°C</li> </ul>
<b>Power derating</b>	<ul style="list-style-type: none"> <li>- Operating without heat sink</li> <li>- Operating with heat sink</li> </ul>	<ul style="list-style-type: none"> <li>2.5 %/K above +60°C</li> <li>3.5 %/K above +70°C</li> </ul>
<b>Thermal impedance</b>	<ul style="list-style-type: none"> <li>- Natural convection</li> <li>- Natural convection with heat sink</li> </ul>	<ul style="list-style-type: none"> <li>18.2 K/W</li> <li>15.8 K/W</li> </ul>
<b>Humidity</b> (non condensing)		95 % rel H max.
<b>Reliability, calculated MTBF</b> (MIL-HDBK-217F, at +25°C, ground benign)		>350'000 h
<b>Isolation voltage</b> (60 s)	- Input/Output	1'500 VDC
<b>Isolation capacitance</b>	- Input/Output	1200 pF max.
<b>Isolation resistance</b>	- Input/Output (500 VDC)	>1'000 MOhm
<b>Remote On/Off</b>	<ul style="list-style-type: none"> <li>- On:</li> <li>- Off:</li> <li>- Off idle current:</li> </ul>	<ul style="list-style-type: none"> <li>2.5 ... 50 VDC or open circuit</li> <li>0 ... +1.0 VDC or short circuit pin 6 and pin 2</li> <li>10 mA max.</li> </ul>
<b>Switching frequency</b> (fixed)		400 kHz typ. (pulse width modulation PWM)
<b>Altitude during operation</b>		5'000 m max. (16'400 ft) approved
<b>Safety standards</b>		UL/cUL 60950-1, IEC/EN 60950-1
<b>Safety approvals</b>		UL/cUL (File no. e188913, entry pending) CB 60950-1:2005 (2nd Ed.)+ A1:2009 + A2:2013 CSA 60950-1 <a href="http://www.tracopower.com/overview/thl10wi">www.tracopower.com/overview/thl10wi</a>
<b>Environmental compliance</b>	<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> RoHS directive 2011/65/EU

### Physical Specifications

<b>Casing material</b>	metal
<b>Baseplate</b>	non conductive FR4
<b>Potting material</b>	epoxy (UL 94V-0 rated)
<b>Weight</b>	15 g (0.53oz)
<b>Soldering temperature</b>	max. +260°C / 10 s

**Application note :** [www.tracopower.com/overview/thl10wi](http://www.tracopower.com/overview/thl10wi)

**Outline Dimensions**



Pin-Out		
Pin	Single	Dual
1	+Vin (Vcc)	+Vin (Vcc)
2	-Vin (GND)	-Vin (GND)
3	+Vout	+Vout
4	No pin	Common
5	-Vout	-Vout
6	Remote On/Off	

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:** THL-HS1

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

**Material:** Aluminum

**Finish:** Anodic treatment (black)

**Weight:** 4.0 g (0.14oz) without converter

Thermal impedance after assembling: 15.8 K/W

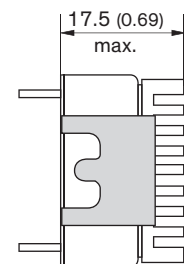
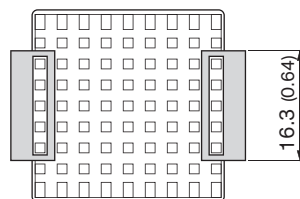
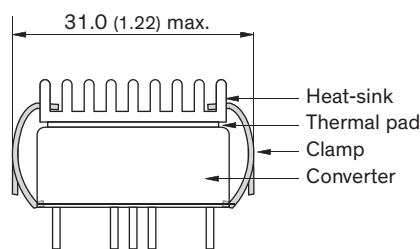


**Note:**

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.



Specifications can be changed without notice! Make sure you are using the latest documentation, downloadable at [www.tracopower.com](http://www.tracopower.com)

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

-  [View THL 10-2410WI on WIN SOURCE](#)
-  [Traco Power Information](#)

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