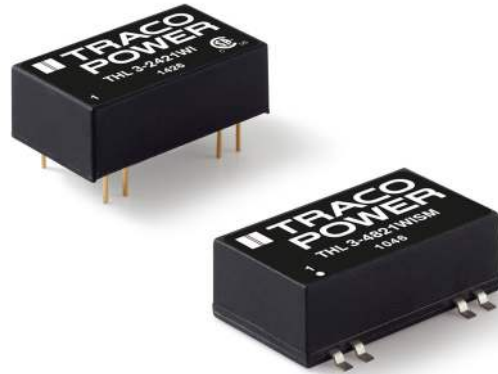


### Features

- ◆ Compact design in SMD or DIP package
- ◆ Ultra wide 4:1 input voltage range
- ◆ Fully regulated outputs
- ◆ I/O isolation 1500 VDC
- ◆ SMD version qualified for leadfree re flow solder process, MSL 2a
- ◆ Operating temp. range  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- ◆ Short circuit protection
- ◆ Remote On/Off control
- ◆ Input filter to meet EN 55022, class A without external components
- ◆ 3-year product warranty



The THL 3WI(SM) series is a family of compact 3 W dc/dc-converters with 4:1 input voltage ranges. The product is available in SMD- or DIP-package. The internal filter which meets EN55022 Class A without external components makes the converter easy to design in.

They come with remote On/Off and short circuit protection. THL 3WI(SM) converter is an excellent solution for data- and telecom applications and for instrumentation and Industrial electronics.

### Models

Order code DIP models	Order code SMD models	Input voltage range	Output voltage	Output current max.	Efficiency typ.
THL 3-2410WI	THL 3-2410WISM	9 – 36 VDC (24 VDC nominal)	3.3 VDC	600 mA	75 %
THL 3-2411WI	THL 3-2411WISM		5.0 VDC	600 mA	78 %
THL 3-2412WI	THL 3-2412WISM		12 VDC	250 mA	80 %
THL 3-2413WI	THL 3-2413WISM		15 VDC	200 mA	80 %
THL 3-2415WI	THL 3-2415WISM		24 VDC	125 mA	80 %
THL 3-2421WI	THL 3-2421WISM		$\pm 5$ VDC	$\pm 300$ mA	77 %
THL 3-2422WI	THL 3-2422WISM		$\pm 12$ VDC	$\pm 125$ mA	80 %
THL 3-2423WI	THL 3-2423WISM		$\pm 15$ VDC	$\pm 100$ mA	80 %
THL 3-4810WI	THL 3-4810WISM	18 – 75 VDC (48 VDC nominal)	3.3 VDC	600 mA	75 %
THL 3-4811WI	THL 3-4811WISM		5.0 VDC	600 mA	78 %
THL 3-4812WI	THL 3-4812WISM		12 VDC	250 mA	80 %
THL 3-4813WI	THL 3-4813WISM		15 VDC	200 mA	80 %
THL 3-4815WI	THL 3-4815WISM		24 VDC	125 mA	80 %
THL 3-4821WI	THL 3-4821WISM		$\pm 5$ VDC	$\pm 300$ mA	77 %
THL 3-4822WI	THL 3-4822WISM		$\pm 12$ VDC	$\pm 125$ mA	80 %
THL 3-4823WI	THL 3-4823WISM		$\pm 15$ VDC	$\pm 100$ mA	80 %

### Input Specifications

<b>Input current at no load</b> (nominal input voltage)	24 Vin models: <b>30 mA typ.</b> 48 Vin models: <b>20 mA typ.</b>
<b>Input current at full load</b> (nominal input voltage)	24 Vin; 3.3 VDC model: <b>110 mA typ.</b> 24 Vin other models: <b>160 mA typ.</b> 48 Vin; 3.3 VDC model: <b>55 mA typ.</b> 48 Vin other models: <b>80 mA typ.</b>
<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>	<b>EN 55022 level A, FCC part 15, level A without external components</b>
<b>Recommended input fuse</b> (slow blow)	24 V models: <b>1500 mA</b> 48 V models: <b>800 mA</b>

### Output Specifications

<b>Voltage set accuracy</b>	<b>±2 % max</b>
<b>Regulation</b>	– Input variation Vin min. to Vin max. <b>1.0 % max.</b> – Load variation 15 – 100 % <b>1.0 % max.</b>
<b>Minimum load</b>	<b>15 % of rated max current</b> (operation at lower load condition is safe but a higher output ripple will be experienced)
<b>Temperature coefficient</b>	<b>±0.02 %/K</b>
<b>Ripple and noise</b> (20 MHz bandwidth)	<b>50 mVp-p max.</b>
<b>Transient response</b> (25 % load step change)	– Recovery time <b>300 µs typ.</b> – Deviation <b>±3 %</b>
<b>Short circuit protection</b>	<b>indefinite, automatic recovery</b>
<b>Capacitive load</b>	3.3 & 5 VDC models: <b>220 µF max.</b> all other models: <b>47 µF max.</b>

### General Specifications

<b>Temperature</b>	– Operating (natural convection cooling 20 LFM) <b>–40°C to +85°C</b> – Storage <b>–40°C to +125°C</b> – Case <b>+105°C max.</b>
<b>Load derating</b> (natural convection cooling 20 LFM)	DIP models: <b>2.5 %/K above +65°C</b> SMD 3.3 & 5.0 VDC models: <b>2.2 %/K above +55°C</b> SMD other models: <b>2.5 %/K above +60°C</b>
<b>Humidity</b> (non condensing)	<b>95 % rel. H max.</b>
<b>Reliability, calculated MTBF</b> (MIL-HDBK-217F, at +25°C, ground benign)	<b>&gt;300'000 h</b>
<b>Isolation voltage</b> (60 sec.)	– Input/Output <b>1'500 VDC</b>
<b>Isolation capacitance</b>	– Input/Output <b>500 pF max.</b>
<b>Isolation resistance</b>	– Input/Output (500 VDC) <b>&gt;1 GOhm</b>
<b>Safety standard</b> (designed to meet)	<b>IEC 60950-1, UL 60950-1</b> – Certification documents <a href="http://www.tracopower.com/overview/thl3wism">www.tracopower.com/overview/thl3wism</a>
<b>Switching frequency</b>	<b>350 kHz</b>
<b>Altitude during operation</b>	<b>5'000 m max. (16'400 ft) approved</b>
<b>Remote On/Off</b>	– On: <b>2.5 to 5.5 VDC or open circuit</b> – Off: <b>–0.7 to 0.8 VDC</b> – Off stand by input current <b>5 mA max.</b>
<b>Environmental compliance</b>	– Reach <a href="http://www.tracopower.com/products/reach-declaration.pdf">www.tracopower.com/products/reach-declaration.pdf</a> – RoHS <b>RoHS directive 2011/65/EU</b>

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

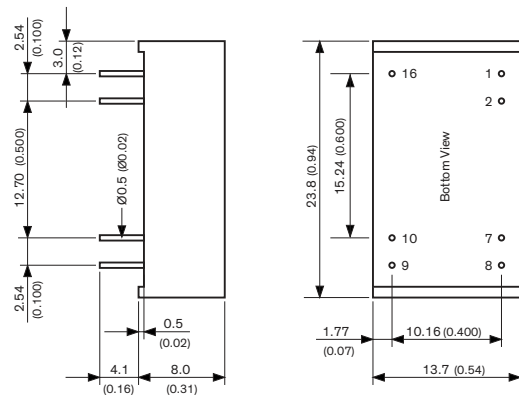
**Physical Specifications**

Casing material	non-conductive plastic (UL94V-0 rated)
Pin material	DIP models: Phosphor bronze SMD models: Copper alloy with gold plated nickel subplate
Package weight	DIP models: 5.4 g (0.19 oz) SMD models: 4.2 g (0.14 oz)
Soldering profile for DIP-package models	max. 265°C / 10 sec. (wave soldering)
Lead-free reflow solder process for SMD-package models	as per J-STD-020D.01 (to find at: <a href="http://www.jedec.org">www.jedec.org</a> - free registration required)
Moisture sensivity level (for SMD-package models)	level 2a as per J-STD-033B.01 (to find at: <a href="http://www.jedec.org">www.jedec.org</a> - free registration required)

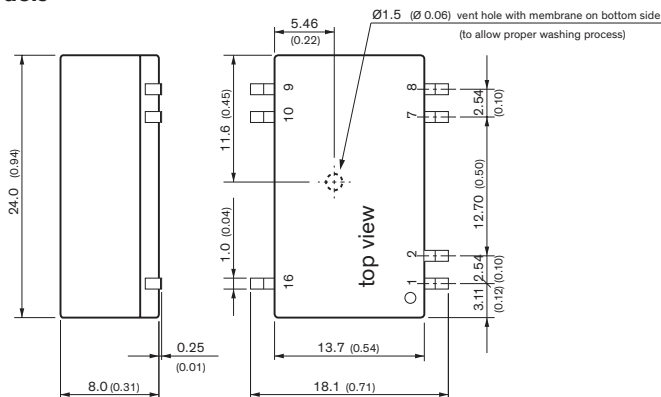
**Supporting documents:** [www.tracopower.com/overview/thl3wi](http://www.tracopower.com/overview/thl3wi)  
[www.tracopower.com/overview/thl3wism](http://www.tracopower.com/overview/thl3wism)

**Outline Dimensions**

**DIP-Models**



**SMD-Models**



Pin-Out		
Pin	Single	Dual
1	-Vin (GND)	-Vin (GND)
2	Remote On/Off	Remote On/Off
7	NC	NC
8	NC	Common
9	+Vout	+Vout
10	-Vout	-Vout
16	+Vin (Vcc)	+Vin (Vcc)

NC = Not connected

Dimensions in mm (inch)  
Tolerances: x.x ±0.25 (x.xx ±0.01)  
                  x.xx ±0.13 (x.xxx ±0.01)  
Pin diameter tolerances: x.x ±0.05 (x.xx ±0.002)

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