

- 15 Watt converter in a 1" x 1" metal package
- Cost efficient design
- Ultra wide 4:1 input voltage range: 9-36 and 18-75 VDC
- Operating temperature range -40 to +70 °C without derating
- Internal EN 55032 class A filter
- 1'500 VDC I/O-isolation
- Protection against overvoltage, overload and short circuit
- Remote On/Off and trim function
- Optional heatsink for increased temperature capabilities
- 3-year product warranty



The THL 15WI series is Traco Power's latest addition to the existing 15 Watt DC/DC converter range. With the focus on combining cost efficiency and quality this isolated high performance 15 Watt DC/DC converter is suitable for many different applications. The series comes in an encapsulated, shielded 1" x 1" x 0.4" metal package and has a fully integrated EN 55032 class A filter. High efficiency up to 91% enables the converter to operate from -40°C to +70°C without derating. All models have an ultra wide 4:1 input voltage range and precisely regulated, isolated outputs. The series meets the latest IT safety certifications (UL 62368-1) and is thus eligible for uses in mobile equipment, instrumentation, distributed power architectures in communication and industrial electronics and everywhere where cost efficiency and quality are critical factors.

### Models

Order Code	Input Voltage Range	Output 1		Output 2		Efficiency typ.
		Vnom	I <sub>max</sub>	Vnom	I <sub>max</sub>	
THL 15-2410WI	9 - 36 VDC (24 VDC nom.)	3.3 VDC	3'400 mA			86 %
THL 15-2411WI		5 VDC	3'000 mA			88 %
THL 15-2412WI		12 VDC	1'250 mA			88 %
THL 15-2413WI		15 VDC	1'000 mA			89 %
THL 15-2415WI		24 VDC	625 mA			91 %
THL 15-2422WI		+12 VDC	625 mA	-12 VDC	625 mA	89 %
THL 15-2423WI		+15 VDC	500 mA	-15 VDC	500 mA	89 %
THL 15-4810WI		18 - 75 VDC (48 VDC nom.)	3.3 VDC	3'400 mA		
THL 15-4811WI	5 VDC		3'000 mA			88 %
THL 15-4812WI	12 VDC		1'250 mA			89 %
THL 15-4813WI	15 VDC		1'000 mA			89 %
THL 15-4815WI	24 VDC		625 mA			91 %
THL 15-4822WI	+12 VDC		625 mA	-12 VDC	625 mA	90 %
THL 15-4823WI	+15 VDC		500 mA	-15 VDC	500 mA	89 %

### Options

THL-HS1	- Optional Heat Sink: <a href="http://www.tracopower.com/products/thl-hs1.pdf">www.tracopower.com/products/thl-hs1.pdf</a>
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## Input Specifications

Input Current	- At no load	24 Vin models: <b>12 mA typ.</b> 48 Vin models: <b>9 mA typ.</b>
	- At full load	24 Vin models: <b>680 mA typ.</b> 48 Vin models: <b>340 mA typ.</b>
Surge Voltage		24 Vin models: <b>50 VDC max.</b> (1 s max.) 48 Vin models: <b>100 VDC max.</b> (1 s max.)
Under Voltage Lockout		24 Vin models: <b>7.5 VDC typ.</b> 48 Vin models: <b>16 VDC typ.</b>
Reflected Ripple Current		24 Vin models: <b>50 mA<sub>p-p</sub> typ.</b> 48 Vin models: <b>30 mA<sub>p-p</sub> typ.</b>
Recommended Input Fuse		24 Vin models: <b>3'800 mA</b> (slow blow) 48 Vin models: <b>1'900 mA</b> (slow blow) (The need of an external fuse has to be assessed in the final application.)
Input Filter		<b>Internal LC-Type</b>

## Output Specifications

Output Voltage Adjustment		<b>±10%</b> (single output models only) (By external trim resistor) See application note: <a href="http://www.tracopower.com/overview/thl15wi">www.tracopower.com/overview/thl15wi</a> Output power must not exceed rated power!
Voltage Set Accuracy		<b>±1% max.</b>
Regulation	- Input Variation (V <sub>min</sub> - V <sub>max</sub> )	single output models: <b>0.2% max.</b> dual output models: <b>0.5% max.</b>
	- Load Variation (0 - 100%)	single output models: <b>0.5% max.</b> (3.3 & 5 V <sub>out</sub> models) <b>0.2% max.</b> (other output models) dual output models: <b>1% max.</b> (Output 1) <b>1% max.</b> (Output 2)
	- Voltage Balance (symmetrical load)	dual output models: <b>2% max.</b>
	- Cross Regulation (25% / 100% asym. load)	dual output models: <b>5% max.</b>
Ripple and Noise (20 MHz Bandwidth)	- single output	3.3 V <sub>out</sub> models: <b>75 mV<sub>p-p</sub> max.</b> (w/ 1 µF, MLCC) 5 V <sub>out</sub> models: <b>75 mV<sub>p-p</sub> max.</b> (w/ 1 µF, MLCC) 12 V <sub>out</sub> models: <b>100 mV<sub>p-p</sub> max.</b> (w/ 1 µF, MLCC) 15 V <sub>out</sub> models: <b>100 mV<sub>p-p</sub> max.</b> (w/ 1 µF, MLCC) 24 V <sub>out</sub> models: <b>150 mV<sub>p-p</sub> max.</b> (w/ 1 µF, MLCC)
	- dual output	12 / -12 V <sub>out</sub> models: <b>100 / 100 mV<sub>p-p</sub> max.</b> (w/ 1 µF, MLCC) 15 / -15 V <sub>out</sub> models: <b>100 / 100 mV<sub>p-p</sub> max.</b> (w/ 1 µF, MLCC)
Capacitive Load	- single output	3.3 V <sub>out</sub> models: <b>5'800 µF max.</b> 5 V <sub>out</sub> models: <b>5'100 µF max.</b> 12 V <sub>out</sub> models: <b>870 µF max.</b> 15 V <sub>out</sub> models: <b>560 µF max.</b> 24 V <sub>out</sub> models: <b>220 µF max.</b>
	- dual output	12 / -12 V <sub>out</sub> models: <b>440 / 440 µF max.</b> 15 / -15 V <sub>out</sub> models: <b>280 / 280 µF max.</b>
Minimum Load		<b>Not required</b>
Temperature Coefficient		<b>±0.02 %/K max.</b>
Start-up Time		<b>30 ms max.</b>
Short Circuit Protection		<b>Continuous, Automatic recovery</b>
Output Current Limitation		<b>130 - 180% of I<sub>out</sub> max.</b> <b>150% typ. of I<sub>out</sub> max.</b>
Oversoltage Protection		<b>120% typ. of V<sub>out</sub> nom.</b>
Transient Response	- Response Deviation	<b>3% typ. / 5% max.</b> (75% to 100% Load Step)
	- Response Time	<b>300 µs typ.</b> (75% to 100% Load Step)

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

### Safety Specifications

Safety Standards	- IT / Multimedia Equipment	EN 62368-1 IEC 62368-1 UL 62368-1
	- Certification Documents	<a href="http://www.tracopower.com/overview/thl15wi">www.tracopower.com/overview/thl15wi</a>
Pollution Degree		PD 2

### EMC Specifications

EMI Emissions	- Conducted Emissions	EN 55032 class A (internal filter) EN 55032 class B (with external filter)
	- Radiated Emissions	EN 55032 class A (with external filter) EN 55032 class B (with external filter)
	External filter proposal:	<a href="http://www.tracopower.com/overview/thl15wi">www.tracopower.com/overview/thl15wi</a>
EMS Immunity	- Electrostatic Discharge	EN 55024 (IT Equipment) Air: EN 61000-4-2, ±8 kV, perf. criteria A Contact: EN 61000-4-2, ±6 kV, perf. criteria A
	- RF Electromagnetic Field	EN 61000-4-3, 10 V/m, perf. criteria A
	- EFT (Burst) / Surge	EN 61000-4-4, ±2 kV, perf. criteria A EN 61000-4-5, ±1 kV, perf. criteria A
	Ext. input component:	470 µF, 100 V, KY ( 3.3 & 5 Vout models) 220 µF, 100 V, KY (other models)
	- Conducted RF Disturbances	EN 61000-4-6, 10 Vrms, perf. criteria A
	- PF Magnetic Field	Continuous: EN 61000-4-8, 100 A/m, perf. criteria A

### General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature - Case Temperature - Storage Temperature	-40°C to +90°C +105°C max. -50°C to +125°C
Power Derating	- High Temperature	See application note: <a href="http://www.tracopower.com/overview/thl15wi">www.tracopower.com/overview/thl15wi</a>
Cooling System		Natural convection (20 LFM)
Remote Control	- Voltage Controlled Remote  - Off Idle Input Current - Remote Pin Input Current	On: 3.5 to 12 VDC or open circuit Off: 0 to 1.2 VDC or short circuit Refers to 'Remote' and '-Vin' Pin 3 mA typ. -0.5 to 0.5 mA
Altitude During Operation		5'000 m max.
Switching Frequency		310 - 385 kHz (PWM) 330 kHz typ. (PWM)
Insulation System		Functional Insulation
Isolation Test Voltage	- Input to Output, 60 s - Input to Output, 1 s - Input to Case, 60 s - Output to Case, 60 s	1'500 VDC 1'800 VDC 1'000 VDC 1'000 VDC
Isolation Resistance	- Input to Output, 500 VDC	1'000 MΩ min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	1'500 pF max.
Reliability	- Calculated MTBF	1'375'000 h (MIL-HDBK-217F, ground benign)
Housing Material		Alu alloy, black anodized coating
Base Material		Non-conductive FR4 (UL94 V-0 rated)
Potting Material		Silicone (UL 94 V-0 rated)
Pin Material		Copper Alloy (C6801)
Pin Foundation Plating		Nickel (2 - 4 µm)
Pin Surface Plating		Tin (5 - 7 µm), matte
Soldering Profile		Wave Soldering 260°C / 10 s max.

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

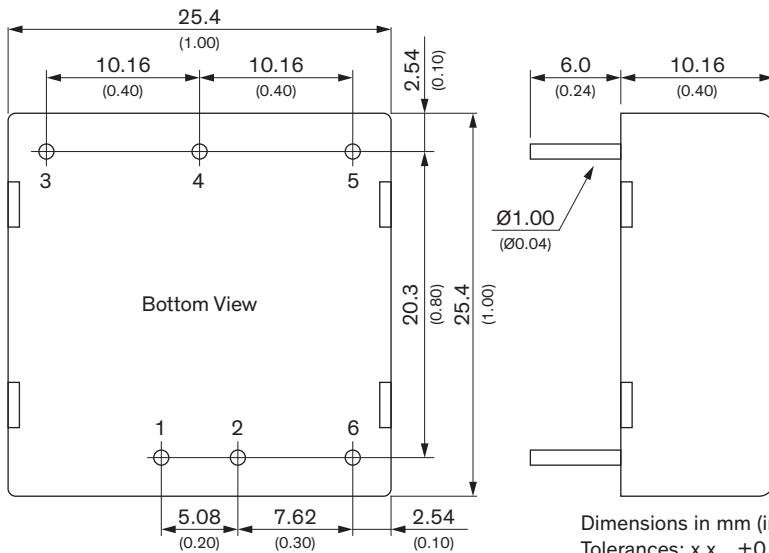
Connection Type	THD (Through-Hole Device)
Weight	15 g
Thermal Impedance	18.2 K/W 15.3 K/W (with Heat Sink)
Environmental Compliance	- REACH Declaration <a href="http://www.tracopower.com/info/reach-declaration.pdf">www.tracopower.com/info/reach-declaration.pdf</a> REACH SVHC list compliant REACH Annex XVII compliant - RoHS Declaration <a href="http://www.tracopower.com/info/rohs-declaration.pdf">www.tracopower.com/info/rohs-declaration.pdf</a> Exemptions: 7a

### Supporting Documents

Overview Link (for additional Documents)

[www.tracopower.com/overview/thl15wi](http://www.tracopower.com/overview/thl15wi)

### Outline Dimensions



### Pinout

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	Remote On/Off