

DC/DC Converter

THL 15WI Series, 15 Watt

- 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 _{max}	Vnom	I _{max}	
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			86 %
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: www.tracopower.com/overview/thl-hs1
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Input Specifications

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

Output Specifications

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

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

Safety Specifications

Standards	- IT / Multimedia Equipment	EN 62368-1 IEC 62368-1 UL 62368-1
	- Certification Documents	www.tracopower.com/overview/thl15wi
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:	www.tracopower.com/overview/thl15wi
EMS (Immunity)		EN 55024 (IT Equipment) EN 55035 (Multimedia)
	- Electrostatic Discharge	Air: EN 61000-4-2, ± 8 kV, perf. criteria A
	- RF Electromagnetic Field	Contact: EN 61000-4-2, ± 6 kV, perf. criteria A
	- EFT (Burst) / Surge	EN 61000-4-3, 10 V/m, perf. criteria A EN 61000-4-4, ± 2 kV, perf. criteria A EN 61000-4-5, ± 1 kV, perf. criteria A
	Ext. input component:	470 μ F, 100 V, KY (3.3 & 5 Vout models) 220 μ F, 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
EMC / Environmental	- Certification Documents	www.tracopower.com/overview/thl15wi

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	Depending on model
	See application note:	www.tracopower.com/overview/thl15wi
Cooling System		Natural convection (20 LFM)
Remote Control	- Voltage Controlled Remote (passive = on) - 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 M Ω 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)
Washing Process		According to Cleaning Guideline www.tracopower.com/info/cleaning.pdf
Housing Material		Alu alloy, black anodized coating
Base Material		Non-conductive FR4 (UL 94 V-0 rated)
Potting Material		Epoxy (UL 94 V-0 rated)

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

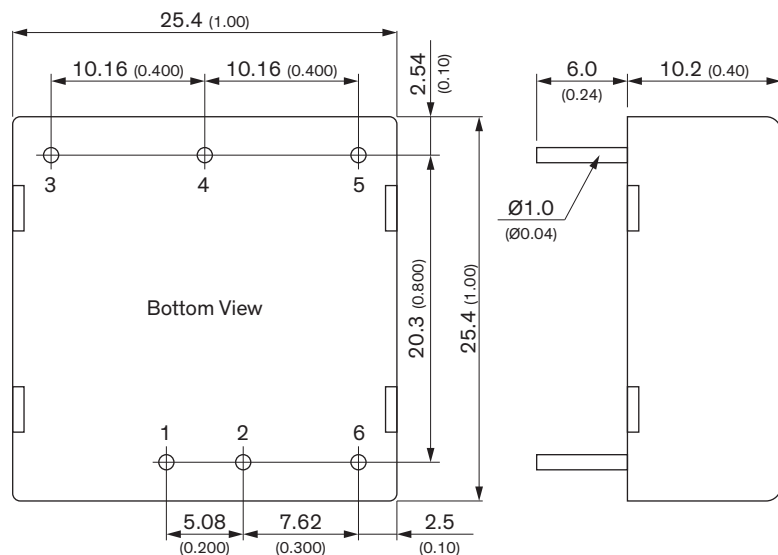
Pin Material	Copper Alloy (C6801)
Pin Foundation Plating	Nickel (2 - 4 μm)
Pin Surface Plating	Tin (5 - 7 μm), matte
Housing Type	Metal Case
Mounting Type	PCB Mount
Connection Type	THD (Through-Hole Device)
Footprint Type	1" x 1"
Soldering Profile	Lead-Free Wave Soldering 260°C / 10 s max.
Weight	15 g
Thermal Impedance	- Case to Ambient 18.2 K/W typ. 15.3 K/W typ. (with Heat Sink)
Environmental Compliance	- REACH Declaration www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant - RoHS Declaration www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7a (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).) - SCIP Reference Number 25c8d24c-541b-4478-b968-360f9fd93851

Supporting Documents

Overview Link (for additional Documents)

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