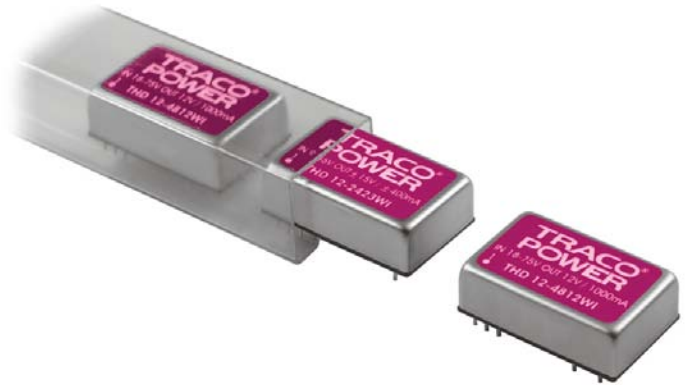


#### Features

- ◆ Highest power density:  
12W in DIP 24 package!
- ◆ Ultra-wide 4:1 input range
- ◆ Very high efficiency up to 85%
- ◆ I/O isolation 1500V
- ◆ Input filter meets EN 55022A without ext. components
- ◆ Remote On/Off
- ◆ Shielded metal case with insulated baseplate
- ◆ Continuous short-circuit protection
- ◆ Operating temp. range  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- ◆ Lead free design, RoHS compliant
- ◆ 3-year product warranty



The THD-12WI series is a range of high performance, isolated 12W dc/dc converter modules featuring ultra wide 4:1 input voltage ranges in a DIP-24 package with industry-standard footprint. Overload and overvoltage protection as well as remote On/Off are included as standard. Built-in filters for both input and output minimizes the need of external filtering. Full SMD-design with exclusive use of ceramic capacitors guarantees a high reliability and long product lifetime. Typical applications for these converters are industrial electronics, instrumentation, data communication systems and battery operated equipment with limited space available on the PCB.

#### Models

Order code	Input voltage range	Output voltage	Output current max.	Efficiency typ.
THD 12-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	3'500 mA	84 %
THD 12-2411WI		5.1 VDC	2'400 mA	85 %
THD 12-2412WI		12 VDC	1'000 mA	85 %
THD 12-2413WI		15 VDC	800 mA	85 %
THD 12-2421WI		$\pm 5$ VDC	$\pm 1'200$ mA	82 %
THD 12-2422WI		$\pm 12$ VDC	$\pm 500$ mA	85 %
THD 12-2423WI		$\pm 15$ VDC	$\pm 400$ mA	85 %
THD 12-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	3'500 mA	84 %
THD 12-4811WI		5.1 VDC	2'400 mA	85 %
THD 12-4812WI		12 VDC	1'000 mA	85 %
THD 12-4813WI		15 VDC	800 mA	85 %
THD 12-4821WI		$\pm 5$ VDC	$\pm 1'200$ mA	82 %
THD 12-4822WI		$\pm 12$ VDC	$\pm 500$ mA	85 %
THD 12-4823WI		$\pm 15$ VDC	$\pm 400$ mA	85 %

### Input Specifications

Input current (no load)	24 V; 3.3 & 5.1 VDC models: 55 mA 24 V; other models: 15 mA 48 V; 3.3 & 5.1 VDC models: 20 mA 48 V; other models: 7 mA
Input current (full load)	24 Vin models: 610 mA typ. 48 Vin models: 310 mA typ.
Input voltage variation (dv/dt)	5 V / ms, max. (complies to ETS 300 132 part. 4.4)
Start-up voltage / under voltage lockout	24 Vin models: 9 VDC / 8 VDC typ. 48 Vin models: 18 VDC / 16 VDC typ.
Surge voltage (100 msec. max.)	24 Vin models: 50 V max. 48 Vin models: 100 V max.
Conducted noise (input)	EN 55022 level A, FCC part 15, level A
ESD (input)	EN 61000-4-2, Perf. Criteria B
Fast Transient (input)	EN 61000-4-4, Perf. Criteria B
Surge (input)	EN 61000-4-5, Perf. Criteria B

### Output Specifications

Voltage set accuracy	±1.2 %
Regulation	– Input variation Vin min. to Vin max. 0.2 % max. – Load variation 10 – 100 % single output models: 0.5 % max. dual output models balanced load: 1.0 % max. dual output models unbalanced load: 5.0 % max.
Transient response setting time (25% load step change)	250 µs
Ripple and noise (20 MHz Bandwidth)	85 mVpk-pk max.
Temperature coefficient	±0.02 %/K
Start up time (nominal Vin and constant resistive load)	– at power on 450 ms typ. – at remote on 5 ms typ.
Output current limitation	150 % typ. of lout max., constant current
Over-voltage protection (only single output models)	3.3 VDC models: 3.9 VDC 5.1 VDC models: 6.2 VDC 12 VDC models: 15 VDC 15 VDC models: 18 VDC
Short circuit protection	indefinite, automatic recovery
Minimum load	10 % of rated max. current (operation at lower load condition will not damage these converters however, they may t meet all listed specifications)
Capacitive load	3.3 & 5.1 Vout models: 2000 µF max. 12 Vout models: 430 µF max. 15 Vout models: 300 µF max. ±5 Vout models: ±1250 µF max. ±12 Vout models: ±200 µF max. ±15 Vout models: ±120 µF max.

### General Specifications

Temperature ranges	– Operating –40°C to + 85°C – Case temperature +105°C max. – Storage –55°C to +105°C
Derating	3.3 & 5.1 Vout models: 2.2 %/K above 60°C other models: 2.5 %/K above 65°C

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

**General Specifications**

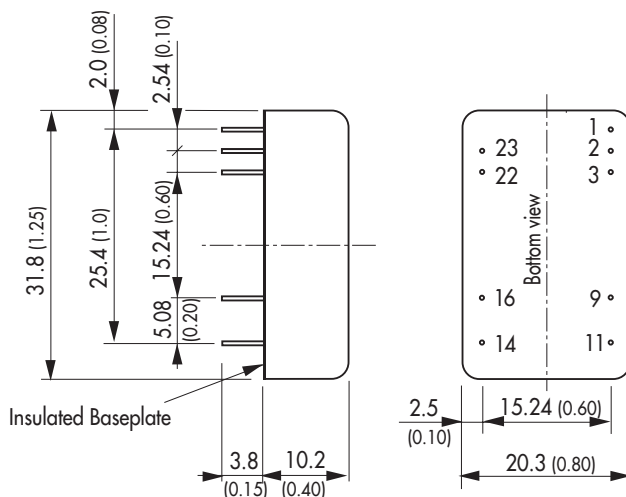
Humidity (non condensing)	95 % rel H max.
Reliability, calculated MTTF (MIL-HDBK-217F, @+25°C, ground benign)	>870'000 h
Thermal shock	MIL-STD-810F
Isolation voltage (60sec.) – Input/Output	1500 VDC
Isolation capacitance – Input/Output	1500 pF max.
Switching frequency	400 kHz typ. (pulse width modulation PWM)
Safety standards	UL 60950-1, IEC/EN 60950-1
Safety approvals – UL/cUL	<a href="http://www.ul.com">www.ul.com</a> -> certifications -> File E188913
Remote On/Off – On:	3.0 ... 12 VDC or open circuit (referenced to -Vin)
– Off:	0 ... 1.2 VDC or short circuit pin 1 and pin 2/3
– Off idle current:	2.5 mA

**Physical Specifications**

Casing material	copper, nickel plated
Baseplate material	non conductive FR4
Potting material	epoxy (UL94V-0 rated)
Weight	18 g (0.62 oz)
Soldering temperature	max. 265°C / 10 sec.

**Application note:** [www.tracopower.com/products/thd12wi-application.pdf](http://www.tracopower.com/products/thd12wi-application.pdf)

**Outline Dimensions**



**Pin-Out**

Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-Vin (GND)	-Vin (GND)
3	-Vin (GND)	-Vin (GND)
9	ntc.	Common
11	ntc.	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

ntc = not to connect

Dimensions in [mm], ( ) = Inch  
Pin diameter  $\varnothing 0.5 \pm 0.05$  ( $0.02 \pm 0.002$ )  
Tolerances  $\pm 0.5$  ( $\pm 0.02$ )  
Pin pitch tolerances  $\pm 0.35$  ( $\pm 0.014$ )

Specifications can be changed any time without notice.