

- Ultra wide 4:1 input voltage range
- Internal EMI-filter meets EN 55032, Class A without external components
- High efficiency up to 87%
- Operating temperature range -40°C to +85°C
- I/O isolation 1'500 VDC
- Overload protection
- 3-year product warranty



The THD 10WIN series is designed for an optimized cost/performance ratio of DC/DC converters with output power of 10 Watt. They come with an internal EMI-filter to meet EN 55032, class A without external components. General features like no minimum load requirement, overload protection and high efficiency make these converters easy to design in. With the popular DIP-24 standard package they are also a drop in replacement for many cost critical applications.

Models						
Order Code	Input Voltage Range	Output 1		Output 2		Efficiency typ.
		Vnom	I <sub>max</sub>	Vnom	I <sub>max</sub>	
THD 10-2410WIN	9 - 36 VDC (24 VDC nom.)	3.3 VDC	2'700 mA			86 %
THD 10-2411WIN		5.1 VDC	2'000 mA			85 %
THD 10-2412WIN		12 VDC	833 mA			87 %
THD 10-2413WIN		15 VDC	666 mA			87 %
THD 10-2415WIN		24 VDC	416 mA			87 %
THD 10-2422WIN		+12 VDC	416 mA	-12 VDC	416 mA	87 %
THD 10-2423WIN		+15 VDC	333 mA	-15 VDC	333 mA	87 %
THD 10-4810WIN	18 - 75 VDC (48 VDC nom.)	3.3 VDC	2'700 mA			86 %
THD 10-4811WIN		5.1 VDC	2'000 mA			85 %
THD 10-4812WIN		12 VDC	833 mA			87 %
THD 10-4813WIN		15 VDC	666 mA			87 %
THD 10-4815WIN		24 VDC	416 mA			87 %
THD 10-4822WIN		+12 VDC	416 mA	-12 VDC	416 mA	87 %
THD 10-4823WIN		+15 VDC	333 mA	-15 VDC	333 mA	87 %

### Input Specifications

Input Current	- At no load	24 Vin models: <b>30 mA typ.</b> 48 Vin models: <b>20 mA typ.</b>
	- At full load	24 Vin models: <b>470 mA typ.</b> 48 Vin models: <b>240 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.)
Start-up Voltage		24 Vin models: <b>7 VDC min. / 8 VDC typ. / 9 VDC max.</b> 48 Vin models: <b>14 VDC min. / 16 VDC typ. / 18 VDC max.</b>
Under Voltage Lockout		24 Vin models: <b>8.5 VDC max.</b> 48 Vin models: <b>17 VDC max.</b>
Reflected Ripple Current		24 Vin models: <b>40 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>2'000 mA</b> (slow blow) 48 Vin models: <b>1'000 mA</b> (slow blow) (The need of an external fuse has to be assessed in the final application.)
Input Filter		<b>Internal Pi-Type</b>

### Output Specifications

Voltage Set Accuracy		<b>±2% max.</b>
Regulation	- Input Variation (Vmin - Vmax)	single output models: <b>1% max.</b> dual output models: <b>1% max.</b>
	- Load Variation (0 - 100%)	single output models: <b>1.2% max.</b> dual output models: <b>1.2% max.</b> (Output 1) <b>1.2% max.</b> (Output 2)
	- Voltage Balance (symmetrical load)	dual output models: <b>2% max.</b>
Ripple and Noise	- 20 MHz Bandwidth	<b>100 mV<sub>p-p</sub> max.</b>
Capacitive Load	- single output	3.3 Vout models: <b>1'000 µF max.</b>
		5.1 Vout models: <b>1'000 µF max.</b>
		12 Vout models: <b>470 µF max.</b>
		15 Vout models: <b>330 µF max.</b>
		24 Vout models: <b>150 µF max.</b>
		- dual output
Minimum Load		<b>Not required</b>
Temperature Coefficient		<b>±0.02 %/K max.</b>
Short Circuit Protection		<b>Continuous, Automatic recovery</b>
Output Current Limitation		<b>150% typ. of I<sub>out</sub> max.</b>
Transient Response	- Response Deviation	<b>3% typ. / 5% max.</b> (75% to 100% Load Step)
	- Response Time	<b>300 µs typ. / 600 µs max.</b> (75% to 100% Load Step)

### Safety Specifications

Safety Standards	- IT / Multimedia Equipment	<b>CSA-C22.2, No. 60950-1</b> <b>EN 60950-1</b> <b>EN 62368-1</b> <b>IEC 60950-1</b> <b>IEC 62368-1</b> <b>UL 60950-1</b> <b>UL 62368-1</b>
	- Certification Documents	<a href="http://www.tracopower.com/overview/thd10win">www.tracopower.com/overview/thd10win</a>
Pollution Degree		<b>PD 2</b>

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

### EMC Specifications

EMI Emissions	- Conducted Emissions	EN 55032 class A (internal filter)
EMS Immunity	- Electrostatic Discharge	Air: EN 61000-4-2, ±8 kV, perf. criteria A Contact: EN 61000-4-3, ±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: 220 µF, 100 V
	- Conducted RF Disturbances	EN 61000-4-6, 10 Vrms, perf. criteria A

### General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-40°C to +85°C
	- Case Temperature	+105°C max.
	- Storage Temperature	-50°C to +125°C
Power Derating	- High Temperature	2.86 %/K above 70°C
		See application note: <a href="http://www.tracopower.com/overview/thd10win">www.tracopower.com/overview/thd10win</a>
Cooling System		Natural convection (20 LFM)
Remote Control	- Voltage Controlled Remote	On: 3.5 to 12 VDC or open circuit Off: 0 to 1.2 VDC or short circuit Refers to 'Remote' and '-Vin' Pin 10 mA max.
	- Off Idle Input Current	-0.5 to 0.5 mA
	- Remote Pin Input Current	
Altitude During Operation		6'000 m max.
Switching Frequency		300 - 360 kHz (PWM)
		330 kHz typ. (PWM)
Insulation System		Functional Insulation
Isolation Test Voltage	- Input to Output, 60 s	1'500 VDC
Isolation Resistance	- Input to Output, 500 VDC	1'000 MΩ min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	1'000 pF typ.
		1'500 pF max.
Reliability	- Calculated MTBF	1'000'000 h (MIL-HDBK-217F, ground benign)
Washing Process		According to Cleaning Guideline <a href="http://www.tracopower.com/info/cleaning.pdf">www.tracopower.com/info/cleaning.pdf</a>
Housing Material		Metal
Base Material		Non-conductive Plastic (UL 94 V-0 rated)
Potting Material		Silicone (UL 94 V-0 rated)
Pin Material		Copper Alloy (C6801)
Pin Foundation Plating		Nickel (2.5 µm min.)
Pin Surface Plating		Gold (75 - 125 nm), glossy
Housing Type		Metal Case
Mounting Type		PCB Mount
Connection Type		THD (Through-Hole Device)
Footprint Type		DIP24
Soldering Profile		Wave Soldering
		260°C / 10 s max.
Weight		17.3 g

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

Environmental Compliance - REACH Declaration

[www.tracopower.com/info/reach-declaration.pdf](http://www.tracopower.com/info/reach-declaration.pdf)

- RoHS Declaration

REACH SVHC list compliant

REACH Annex XVII compliant

[www.tracopower.com/info/rohs-declaration.pdf](http://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).  
The SCIP number is provided on request.)

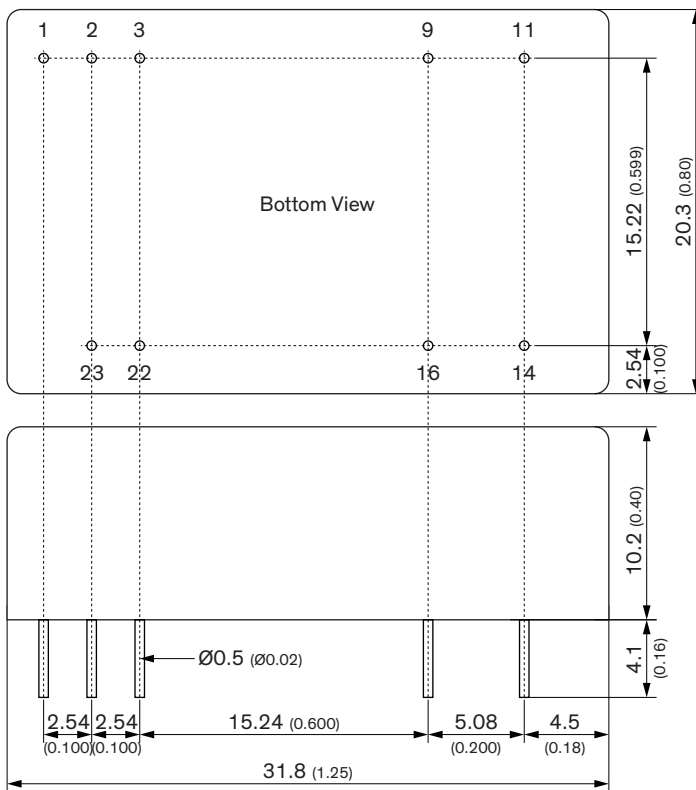
### Supporting Documents

Weight

[Overview Link](#) (for additional Documents)

[www.tracopower.com/overview/thd10win](http://www.tracopower.com/overview/thd10win)

### Outline Dimensions



Dimensions in mm (inch)

Tolerances:  $x.x \pm 0.50$  ( $x.xx \pm 0.02$ )

Tolerances:  $x.xx \pm 0.25$  ( $x.xxx \pm 0.01$ )

Pin diameter tolerance:  $x.x \pm 0.05$  ( $x.xx \pm 0.002$ )

### Pinout

Pin	Single	Dual
1	Remote On/Off	Remote On/Off
2	-Vin (GND)	-Vin (GND)
3	-Vin (GND)	-Vin (GND)
9	No pin	Common
11	NC	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin (Vcc)	+Vin (Vcc)
23	+Vin (Vcc)	+Vin (Vcc)

NC: Not connected