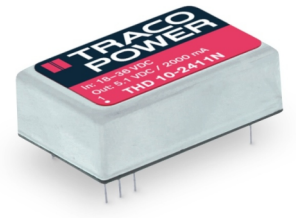
TRACO POWER

DC/DC Converter

THD 10N Series, 10 Watt

- **Wide 2:1 input voltage range**
- **Internal EMI-filter meets EN 55032, Class A without external components**
- **High efficiency up to 89%**
- **Operating temperature range −40°C to +85°C**
- **I/O isolation 1'500 VDC**
- **Overload protection**
- **3-year product warranty**



UL 62368-1 IEC 62368-1

The THD 10N series is a range of isolated high performance 10W DC/DC converters in a low profile DIL-24 package with standard industry pin-out. Other features of this product are built-in EMI-filter to meet EN 55032, class A. 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 1		Output 2		Efficiency
		Vnom	Imax	Vnom	Imax	typ.
THD 10-1210N	9 - 18 VDC (12 VDC nom.)	3.3 VDC	2'700 mA			86 %
THD 10-1211N		5.1 VDC	2'000 mA			85 %
THD 10-1212N		12 VDC	833 mA			88 %
THD 10-1213N		15 VDC	666 mA			89 %
THD 10-1222N		+12 VDC	416 mA	−12 VDC	416 mA	88 %
THD 10-1223N		+15 VDC	333 mA	−15 VDC	333 mA	89 %
THD 10-2410N	18 - 36 VDC (24 VDC nom.)	3.3 VDC	2'700 mA			86 %
THD 10-2411N		5.1 VDC	2'000 mA			85 %
THD 10-2412N		12 VDC	833 mA			89 %
THD 10-2413N		15 VDC	666 mA			89 %
THD 10-2422N		+12 VDC	416 mA	−12 VDC	416 mA	88 %
THD 10-2423N		+15 VDC	333 mA	−15 VDC	333 mA	89 %
THD 10-4810N	36 - 75 VDC (48 VDC nom.)	3.3 VDC	2'700 mA			86 %
THD 10-4811N		5.1 VDC	2'000 mA			85 %
THD 10-4812N		12 VDC	833 mA			87 %
THD 10-4813N		15 VDC	666 mA			88 %
THD 10-4822N		+12 VDC	416 mA	−12 VDC	416 mA	87 %
THD 10-4823N		+15 VDC	333 mA	−15 VDC	333 mA	88 %

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Input Specifications

Input Current	- At no load	12 Vin models:	20 mA typ.
		24 Vin models:	15 mA typ.
		48 Vin models:	10 mA typ.
	- At full load	12 Vin models:	940 mA typ.
		24 Vin models:	470 mA typ.
		48 Vin models:	240 mA typ.
Surge Voltage		12 Vin models:	25 VDC max. (1 s max.)
		24 Vin models:	50 VDC max. (1 s max.)
		48 Vin models:	100 VDC max. (1 s max.)
Under Voltage Lockout		12 Vin models:	8.5 VDC max.
		24 Vin models:	17 VDC max.
		48 Vin models:	34 VDC max.
Recommended Input Fuse			(The need of an external fuse has to be assessed in the final application.)
Input Filter			Internal Pi-Type

Output Specifications

Voltage Set Accuracy			±2% max.
Regulation	- Input Variation (Vmin - Vmax)	single output models:	1% max.
		dual output models:	1% max.
	- Load Variation (0 - 100%)	single output models:	1.2% max.
		dual output models:	1.2% max. (Output 1)
			1.2% max. (Output 2)
	- Voltage Balance (symmetrical load)	dual output models:	2% max.
Ripple and Noise (20 MHz Bandwidth)	- single output	3.3 Vout models:	80 mVp-p typ.
		5.1 Vout models:	80 mVp-p typ.
		12 Vout models:	100 mVp-p typ.
		15 Vout models:	100 mVp-p typ.
	- dual output	12 / -12 Vout models:	100 / 100 mVp-p typ.
		15 / -15 Vout models:	100 / 100 mVp-p typ.
Capacitive Load	- single output	3.3 Vout models:	1'000 µF max.
		5.1 Vout models:	1'000 µF max.
		12 Vout models:	470 µF max.
		15 Vout models:	330 µF max.
	- dual output	12 / -12 Vout models:	220 / 220 µF max.
		15 / -15 Vout models:	150 / 150 µF max.
Minimum Load			Not required
Temperature Coefficient			±0.02 %/K max.
Short Circuit Protection			Continuous, Automatic recovery
Output Current Limitation			110% min. of Iout max.
			150% typ. of Iout max.
Transient Response	- Response Deviation		3% typ. / 5% max. (75% to 100% Load Step)
	- Response Time		300 µs typ. / 600 µs max. (75% to 100% Load Step)

Safety Specifications

Standards	- IT / Multimedia Equipment	CSA-C22.2, No. 60950-1
		EN 60950-1
		EN 62368-1
		IEC 60950-1
		IEC 62368-1
		UL 60950-1
		UL 62368-1
	- Certification Documents	www.tracopower.com/thd10n-safety-cert/

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

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Energy Source	- Output, acc. to 62368-1		ES1
Power Source	- Output, acc. to 62368-1		PS3
Pollution Degree			PD 2
Over Voltage Category			Not mains connected

EMC Specifications

EMI (Emissions)	- Conducted Emissions		EN 55032 class A (internal filter)
	- Radiated Emissions		EN 55032 class A (with external filter)
		External filter proposal:	www.tracopower.com/thd10n-emc-filter/
EMS (Immunity)			EN 55024 (IT Equipment)
			EN 55035 (Multimedia)
	- Electrostatic Discharge	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:	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:	www.tracopower.com/thd10n-cc/
Cooling System			Natural convection (20 LFM)
Remote Control	- Voltage Controlled Remote (passive = on)		On: 3.5 to 12 VDC or open circuit Off: 0 to 1.2 VDC or short circuit Refers to 'Remote' and '-Vin' Pin
	- Off Idle Input Current		10 mA max.
	- Remote Pin Input Current		-0.5 to 0.5 mA
Altitude During Operation			6'000 m max.
Switching Frequency			330 kHz typ. (PWM)
Insulation System			Functional Insulation
Isolation Test Voltage	- Input to Output, 60 s		1'500 VDC
	- Input to Output, 1 s		1'800 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 www.tracopower.com/info/cleaning.pdf
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 - 4 µm)
Pin Surface Plating			Tin (3 - 5 µm), matte
Housing Type			Metal Case
Mounting Type			PCB Mount
Connection Type			THD (Through-Hole Device)
Footprint Type			DIP24
Soldering Profile			Lead-Free 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.

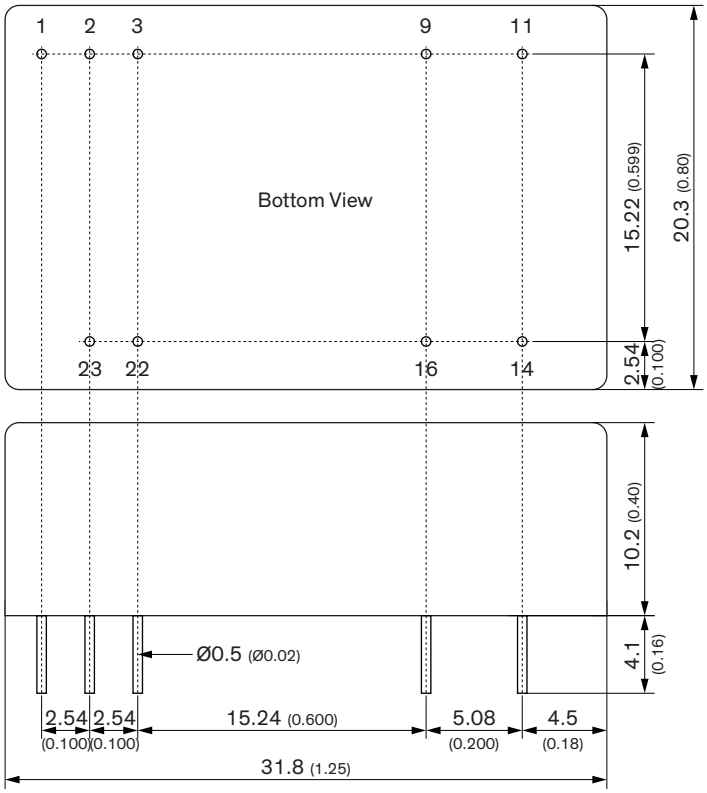
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Environmental Compliance	- REACH Declaration	www.tracopower.com/info/reach-declaration.pdf REACH SVHC list compliant REACH Annex XVII compliant
	- RoHS Declaration	www.tracopower.com/info/rohs-declaration.pdf Exemptions: 7(a) (RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule).)
	- SCIP Reference Number	0e7ab114-c5ea-46b9-89dd-9cc326cfc9f0

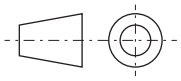
Additional Information

Supporting Documents	www.tracopower.com/overview/thd10n
Frequently Asked Questions	www.tracopower.com/glossary-faq
Glossary	www.tracopower.com/info/glossary.pdf
Service Portal	www.tracoserviceportal.com

Outline Dimensions



Dimensions in mm (inch)
Tolerances: x.x ±0.50 (x.xx ±0.02)
Tolerances: x.xx ±0.25 (x.xxx ±0.01)
Pin diameter tolerance: x.x ±0.05 (x.xx ±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

Avoid routing PCB traces under the converter.

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