TRACO POWER

DC/DC Converter

THR 20WI Series, 20 Watt

- **Reinforced I/O-isolation 3000 VAC**
- **Shock and vibration resistance according to EN 61373**
- **Wide 4:1 input voltage range: 9-36, 18-75, 40-160 VDC**
- **Operating temperature range -40 to +85°C**
- **Internal EN 55032 class A filter**
- **High efficiency up to 88%**
- **Protection against overload, overvoltage and short circuit**
- **3-year product warranty**



UL 62368-1 IEC 62368-1

The THR 20WI is 20 Watt DC/DC converters series with reinforced isolation (3000 VAC). These regulated DC/DC converters come in either a 2"x1" package and also feature increased resistance against shock and vibration according to EN 61373. The THR 20WI offers an internal input filter to comply with EN 55032 class A. High efficiencies up to 88% allow safe operation from −40°C to +80°C (with derating). All models have a wide 4:1 input voltage range and precisely regulated, isolated output voltages. With the latest IT safety certifications (IEC/EN/UL 62368-1) the THR 20WI series is the perfect choice for many demanding applications in the industrial, transportation and instrumentation sectors.

Models

Order Code	Input Voltage Range	Output 1		Output 2		Efficiency
		Vnom	Imax	Vnom	Imax	typ.
THR 20-2411WI	9 - 36 VDC (24 VDC nom.)	5 VDC	4'000 mA			87 %
THR 20-2412WI		12 VDC	1'670 mA			87 %
THR 20-2413WI		15 VDC	1'330 mA			87 %
THR 20-2415WI		24 VDC	833 mA			87 %
THR 20-2422WI		+12 VDC	833 mA	−12 VDC	833 mA	86 %
THR 20-2423WI		+15 VDC	667 mA	−15 VDC	667 mA	86 %
THR 20-4811WI	18 - 75 VDC (48 VDC nom.)	5 VDC	4'000 mA			87 %
THR 20-4812WI		12 VDC	1'670 mA			88 %
THR 20-4813WI		15 VDC	1'330 mA			88 %
THR 20-4815WI		24 VDC	833 mA			88 %
THR 20-4822WI		+12 VDC	833 mA	−12 VDC	833 mA	87 %
THR 20-4823WI		+15 VDC	667 mA	−15 VDC	667 mA	87 %
THR 20-7211WI	40 - 160 VDC (110 VDC nom.)	5 VDC	4'000 mA			84 %
THR 20-7212WI		12 VDC	1'670 mA			86 %
THR 20-7213WI		15 VDC	1'330 mA			86 %
THR 20-7215WI		24 VDC	833 mA			86 %
THR 20-7222WI		+12 VDC	833 mA	−12 VDC	833 mA	86 %
THR 20-7223WI		+15 VDC	667 mA	−15 VDC	667 mA	86 %

Options

THR-HS1	- Optional Heat Sink with Height = 0.25": www.tracopower.com/overview/thr-hs1
on demand (backorder with MOQ non stocking item)	- Optional Heat Sink with Height = 0.5": www.tracopower.com/overview/thr-hs2 - Optional Heat Sink with Height = 1.0": www.tracopower.com/overview/thr-hs3 - Optional models with alternative pinning - Optional models with pre-assembled heatsink

Input Specifications

Input Current	- At no load	24 Vin models:	**25 mA typ.**
		48 Vin models:	**15 mA typ.**
		110 Vin models:	**10 mA typ.**
	- At full load	24 Vin models:	**961 mA typ.**
		48 Vin models:	**476 mA typ.**
		110 Vin models:	**212 mA typ.**
Surge Voltage		24 Vin models:	**50 VDC max.** (100 ms max.)
		48 Vin models:	**100 VDC max.** (100 ms max.)
		110 Vin models:	**170 VDC max.** (100 ms max.)
Under Voltage Lockout		24 Vin models:	**7.5 VDC typ.**
		48 Vin models:	**16 VDC typ.**
		110 Vin models:	**37 VDC typ.**
Recommended Input Fuse		24 Vin models:	**5'000 mA** (slow blow)
		48 Vin models:	**2'500 mA** (slow blow)
		110 Vin models:	**1'250 mA** (slow blow)
			(The need of an external fuse has to be assessed in the final application.)
Input Filter			Internal Pi-Type

Output Specifications

Output Voltage Adjustment			**±10%** (single output models only)
			(By external trim resistor)
		See application note:	www.tracopower.com/thr20wi-adj/
			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:	**0.2% max.**
	- Load Variation (0 - 100%)	single output models:	**0.5% max.**
		dual output models:	**1% max.** (Output 1)
			1% max. (Output 2)
	- Voltage Balance (symmetrical load)	dual output models:	**2% max.**
Ripple and Noise (20 MHz Bandwidth)	- single output	5 Vout models:	**50 mVp-p typ.** (w/ 10 µF, 25 V MLCC)
		12 Vout models:	**100 mVp-p typ.** (w/ 10 µF, 25 V MLCC)
		15 Vout models:	**100 mVp-p typ.** (w/ 10 µF, 25 V MLCC)
		24 Vout models:	**150 mVp-p typ.** (w/ 4.7 µF, 50 V MLCC)
	- dual output	12 / -12 Vout models:	**100 / 100 mVp-p typ.** (w/ 10 µF, 25 V MLCC)
		15 / -15 Vout models:	**100 / 100 mVp-p typ.** (w/ 10 µF, 25 V MLCC)
Capacitive Load	- single output	5 Vout models:	**6'800 µF max.**
		12 Vout models:	**1'200 µF max.**
		15 Vout models:	**750 µF max.**
		24 Vout models:	**300 µF max.**
	- dual output	12 / -12 Vout models:	**600 / 600 µF max.**
		15 / -15 Vout models:	**380 / 380 µF max.**
Minimum Load			Not required
Temperature Coefficient			**±0.02 %/K max.**
Start-up Time			**30 ms typ. / 50 ms max.**
Short Circuit Protection			Continuous, Automatic recovery
Output Current Limitation			**150% typ. of Iout max.**
Overvoltage Protection			**125% typ. of Vout nom.**
Transient Response	- Response Deviation		**3% typ. / 5% max.** (75% to 100% Load Step)
	- Response Time		**300 µs max.** (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/thr20wi-safety-cert/
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 55011 class A (internal filter) EN 55032 class A (internal filter) FCC 47 Part 15 class A (internal filter)
	- Radiated Emissions		EN 55011 class A (with external filter) EN 55032 class A (with external filter) FCC 47 Part 15 class A (with external filter)
		External filter proposal:	www.tracopower.com/thr20wi-emc-filter/
EMS (Immunity)			EN 55024 (IT Equipment) EN 55035 (Multimedia)
	- Electrostatic Discharge	Air: Contact:	EN 61000-4-2, ±8 kV, perf. criteria A 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, ±2 kV, perf. criteria A
		Ext. input component:	24 Vin models: 390 µF chemi-con KY 48 Vin models: 330 µF chemi-con KY 110 Vin models: 390 µF chemi-con KXJ
	- Conducted RF Disturbances		EN 61000-4-6, 10 Vrms, perf. criteria A
	- PF Magnetic Field	Continuous: 1 s:	EN 61000-4-8, 100 A/m, perf. criteria A EN 61000-4-8, 1000 A/m, perf. criteria A
EMC / Environmental	- Certification Documents		www.tracopower.com/thr20wi-emc-cert/

General Specifications

Relative Humidity			95% max. (non condensing)
Temperature Ranges	- Operating Temperature		–40°C to +80°C –40°C to +92°C (with heatsink THR-HS1) –40°C to +93°C (with heatsink THR-HS2) –40°C to +95°C (with heatsink THR-HS3)
	- Case Temperature		+105°C max.
	- Storage Temperature		–50°C to +125°C
Power Derating	- High Temperature		Depending on model
		See application note:	www.tracopower.com/thr20wi-cc/
Over Temperature Protection Switch Off	- Protection Mode		115°C typ. (Automatic recovery at 100°C typ.)
	- Measurement Point		Case
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		2.5 mA typ.
	- Remote Pin Input Current		-0.5 to 0.5 mA
Altitude During Operation			5'000 m max.
Regulator Topology			Flyback Converter
Switching Frequency			260 - 310 kHz (PWM) 280 kHz typ. (PWM)
Insulation System			Reinforced Insulation

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

Working Voltage (rated)		250 VAC
Isolation Test Voltage	- Input to Output, 60 s	3'000 VAC
	- Input to Case, 60 s	1'500 VAC
	- Output to Case, 60 s	1'500 VAC
Isolation Resistance	- Input to Output, 500 VDC	1'000 MΩ min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	1'500 pF typ.
Reliability	- Calculated MTBF	665'000 h (MIL-HDBK-217F, ground benign)
Washing Process		According to Cleaning Guideline www.tracopower.com/info/cleaning.pdf
Environment	- Vibration	EN 61373
	- Mechanical Shock	EN 61373
Housing Material		Red Copper, Powder Coating
Base Material		Non-conductive FR4 (UL 94 V-0 rated)
Isolation Frame 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		2" x 1"
Soldering Profile		Lead-Free Wave Soldering 260°C / 10 s max.
Weight		40.5 g
Thermal Impedance	- Case to Ambient	12.1 K/W typ. 9.2 K/W typ. (with heatsink THR-HS1) 8.5 K/W typ. (with heatsink THR-HS2) 7.8 K/W typ. (with heatsink THR-HS3)
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	2af2841c-3288-4e4f-8a7c-759da8c670cf

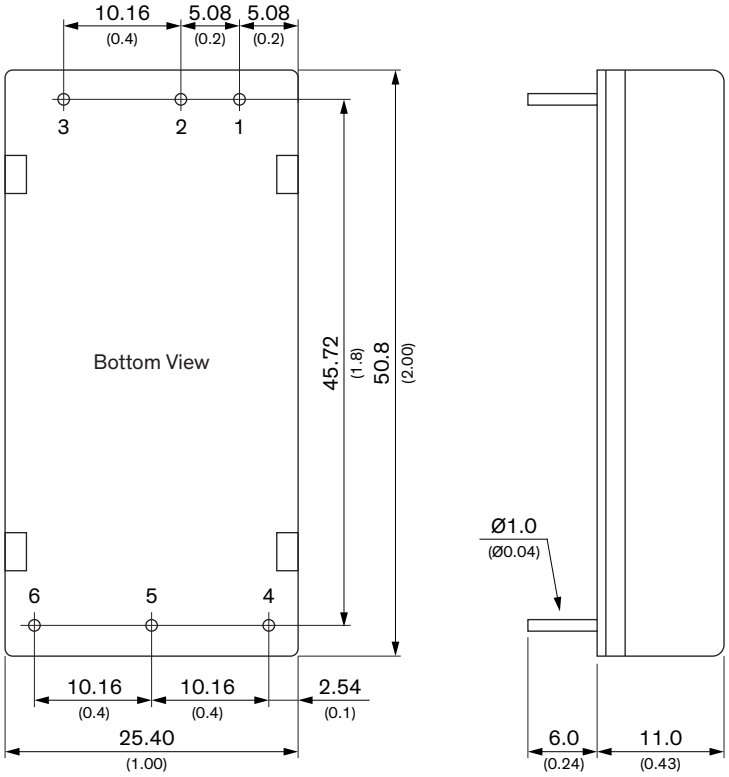
Additional Information

Supporting Documents	www.tracopower.com/overview/thr20wi
Frequently Asked Questions	www.tracopower.com/glossary-faq
Glossary	www.tracopower.com/info/glossary.pdf
Service Portal	www.tracoserviceportal.com

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

Outline Dimensions

Standard version



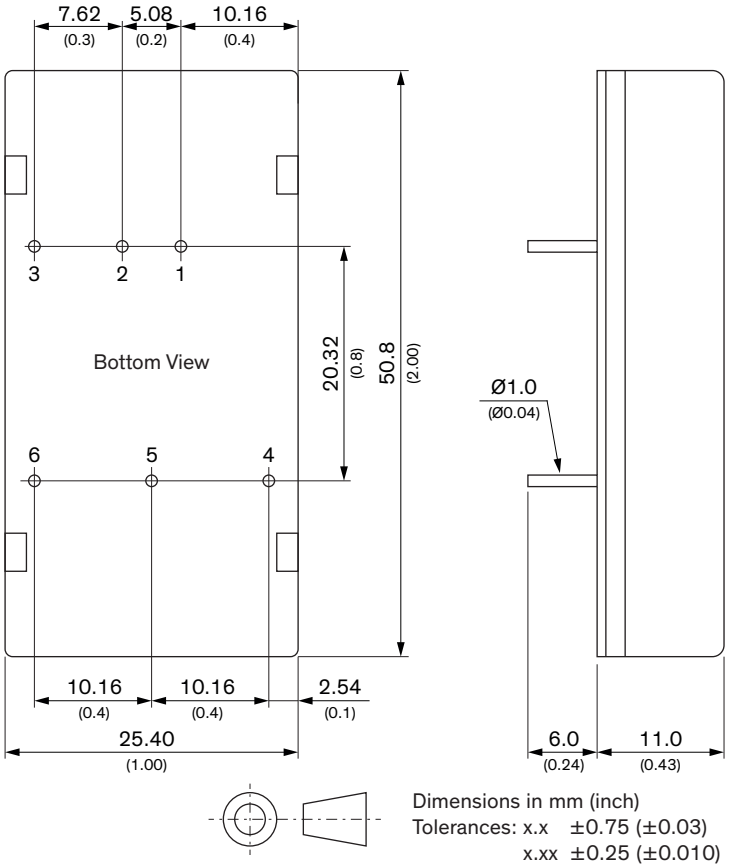
Dimensions in mm (inch)
Tolerances: x.x ±0.75 (±0.03)
x.xx ±0.25 (±0.010)
Pin diameter ±0.05 (±0.002)

Pinout		
Pin	**Single**	**Dual**
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	–Vout	Common
6	Trim	–Vout

Avoid routing PCB traces under the converter.

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

Alternative Pinning version



Dimensions in mm (inch)
Tolerances: x.x ±0.75 (±0.03)
x.xx ±0.25 (±0.010)
Pin diameter ±0.05 (±0.002)

Pinout		
Pin	**Single**	**Dual**
1	+Vin (Vcc)	+Vin (Vcc)
2	–Vin (GND)	–Vin (GND)
3	Remote On/Off	Remote On/Off
4	+Vout	+Vout
5	Trim	Common
6	–Vout	–Vout

Avoid routing PCB traces under the converter.

© Copyright 2026 Traco Electronic AG