

- Compact SIP-8 package
- I/O-isolation voltage 1'600 VDC
- Ultra-wide 4:1 input voltage range
- Fully regulated outputs
- Operating temperature range -40°C to $+93^{\circ}\text{C}$
- Continuous short circuit protection
- Remote On/Off
- 3-year product warranty
- Designed to meet UL 62368-1



TEC 2WI is a new series with the design purpose to improve the prevalent 2 Watt SIP-8 DC/DC converters in terms of cost, efficiency and performance. The latest technology and components enable an increase in efficiency by more than 20%. With the reduction of thermal loss, the operating temperature range can be expanded from -40°C to $+93^{\circ}\text{C}$. The converters are fully regulated over 0 - 100% load (no minimum load is required). The models are available with ultra-wide input ranges of 4.5-18, 9-36 and 18-75 VDC. The functional I/O-isolation system is designed to meet IEC/EN 62368-1 with a test voltage (60 s) of 1600 VDC.

Models						
Order Code	Input Voltage Range	Output 1		Output 2		Efficiency typ.
		Vnom	I _{max}	Vnom	I _{max}	
TEC 2-1210WI	4.5 - 18 VDC (12 VDC nom.)	3.3 VDC	500 mA			75 %
TEC 2-1211WI		5 VDC	400 mA			80 %
TEC 2-1219WI		9 VDC	222 mA			81 %
TEC 2-1212WI		12 VDC	167 mA			81 %
TEC 2-1213WI		15 VDC	134 mA			82 %
TEC 2-1215WI		24 VDC	83 mA			82 %
TEC 2-1221WI		+5 VDC	200 mA	-5 VDC	200 mA	80 %
TEC 2-1222WI		+12 VDC	83 mA	-12 VDC	83 mA	82 %
TEC 2-1223WI		+15 VDC	67 mA	-15 VDC	67 mA	81 %
TEC 2-2410WI		9 - 36 VDC (24 VDC nom.)	3.3 VDC	500 mA		
TEC 2-2411WI	5 VDC		400 mA			80 %
TEC 2-2419WI	9 VDC		222 mA			80 %
TEC 2-2412WI	12 VDC		167 mA			82 %
TEC 2-2413WI	15 VDC		134 mA			82 %
TEC 2-2415WI	24 VDC		83 mA			82 %
TEC 2-2421WI	+5 VDC		200 mA	-5 VDC	200 mA	79 %
TEC 2-2422WI	+12 VDC		83 mA	-12 VDC	83 mA	82 %
TEC 2-2423WI	+15 VDC		67 mA	-15 VDC	67 mA	80 %
TEC 2-4810WI	18 - 75 VDC (48 VDC nom.)		3.3 VDC	500 mA		
TEC 2-4811WI		5 VDC	400 mA			79 %
TEC 2-4819WI		9 VDC	222 mA			81 %
TEC 2-4812WI		12 VDC	167 mA			82 %
TEC 2-4813WI		15 VDC	134 mA			81 %
TEC 2-4815WI		24 VDC	83 mA			81 %
TEC 2-4821WI		+5 VDC	200 mA	-5 VDC	200 mA	79 %
TEC 2-4822WI		+12 VDC	83 mA	-12 VDC	83 mA	81 %
TEC 2-4823WI		+15 VDC	67 mA	-15 VDC	67 mA	81 %

Input Specifications

Input Current	- At no load	12 Vin models: 35 mA typ. 24 Vin models: 20 mA typ. 48 Vin models: 10 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: 2 VDC min. / 3 VDC typ. / 4 VDC max. 24 Vin models: 6 VDC min. / 7 VDC typ. / 8 VDC max. 48 Vin models: 13 VDC min. / 15 VDC typ. / 17 VDC max.
Recommended Input Fuse		12 Vin models: 1'000 mA (slow blow) 24 Vin models: 500 mA (slow blow) 48 Vin models: 315 mA (slow blow) (The need of an external fuse has to be assessed in the final application.)
Input Filter		Internal Capacitor

Output Specifications

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: 1% max. dual output models: 1% max. (Output 1) 1% max. (Output 2)
	- Cross Regulation (25% / 100% asym. load)	dual output models: 5% max.
Ripple and Noise	- 20 MHz Bandwidth	75 mVp-p typ.
Capacitive Load	- single output	3.3 Vout models: 3'300 µF max. 5 Vout models: 1'680 µF max. 9 Vout models: 1'000 µF max. 12 Vout models: 820 µF max. 15 Vout models: 680 µF max. 24 Vout models: 220 µF max.
	- dual output	5 / -5 Vout models: 1'000 / 1'000 µF max. 12 / -12 Vout models: 470 / 470 µF max. 15 / -15 Vout models: 330 / 330 µF max.
Minimum Load		Not required
Temperature Coefficient		±0.02 %/K max.
Start-up Time		10 ms typ. / 20 ms max.
Short Circuit Protection		Continuous, Automatic recovery
Output Current Limitation		130 - 230% of Iout max. 170% typ. of Iout max.
Transient Response	- Response Time	500 µs typ. (25% Load Step)

Safety Specifications

Safety Standards	- IT / Multimedia Equipment	Designed for EN 62368-1 (no certification)
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EMC Specifications

EMI Emissions	- Conducted Emissions	EN 55032 class A (with external 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/tec2wi

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

EMS Immunity	- 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
	- Conducted RF Disturbances	Ext. input component: KY 220 μ F / 100 V
	- PF Magnetic Field	Continuous: EN 61000-4-6, 10 Vrms, perf. criteria A
		1 s: EN 61000-4-8, 100 A/m, perf. criteria A

General Specifications		
Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-40°C to +93°C
	- Case Temperature	+105°C max.
	- Storage Temperature	-55°C to +125°C
Power Derating	- High Temperature	4.8 %/K above 84°C
		See application note: www.tracopower.com/overview/tec2wi
Cooling System		Natural convection (20 LFM)
Remote Control	- Current Controlled Remote	On: open circuit
		Off: 2 to 4 mA current (internal 1 k Ω resistor)
		External circuit proposal: www.tracopower.com/info/current-remote.pdf
	- Off Idle Input Current	2.5 mA typ.
Switching Frequency		100 kHz min. (PFM)
Insulation System		Functional Insulation
Isolation Test Voltage	- Input to Output, 60 s	1'600 VDC
Isolation Resistance	- Input to Output, 500 VDC	1'000 M Ω min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	50 pF max.
Reliability	- Calculated MTBF	6'621'000 h (MIL-HDBK-217F, ground benign)
Washing Process		Allowed (hermetical product)
		See Cleaning Guideline: www.tracopower.com/info/cleaning.pdf
Environment	- Vibration	MIL-STD-810F
	- Mechanical Shock	MIL-STD-810F
	- Thermal Shock	MIL-STD-810F
Housing Material		Non-conductive Plastic (UL 94 V-0 rated)
Potting Material		Silicone (UL 94 V-0 rated)
Pin Material		Copper
Pin Foundation Plating		Nickel (1 - 2 μ m)
Pin Surface Plating		Tin (3 - 5 μ m), matte
Housing Type		Plastic Case
Mounting Type		PCB Mount
Connection Type		THD (Through-Hole Device)
Footprint Type		SIP8
Soldering Profile		Wave Soldering
		260°C / 10 s max.
Weight		4.5 g
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, 7c-I
		(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.)

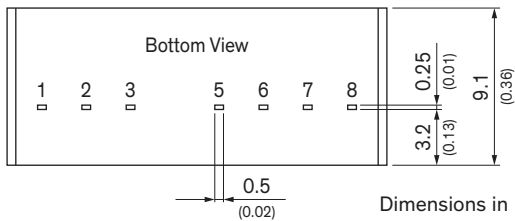
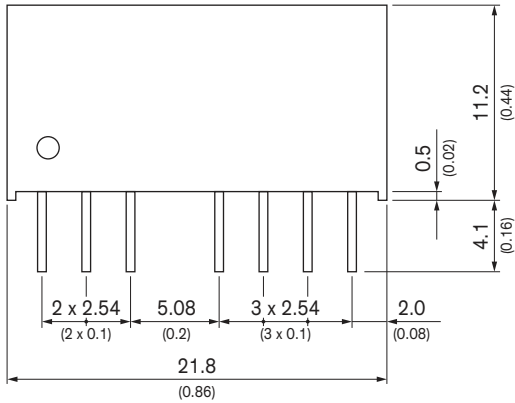
All specifications valid at nominal voltage, resistive full load and +25°C after warm-up time, unless otherwise stated.

Supporting Documents

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

www.tracopower.com/overview/tec2wi

Outline Dimensions



Dimensions in mm (inch)
 Tolerances: ± 0.5 (± 0.02)
 Pin pitch tolerances ± 0.25 (± 0.01)
 Pin dimension tolerance ± 0.1 (0.004)

Pinout		
Pin	Single	Dual
1	-Vin (GND)	-Vin (GND)
2	+Vin (Vcc)	+Vin (Vcc)
3	Remote On/Off	Remote On/Off
5	NC	NC
6	+Vout	+Vout
7	-Vout	Common
8	NC	-Vout

NC: Not connected