

- 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°C
- Continuous short circuit protection
- Remote On/Off
- 3-year product warranty



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°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 approved to IEC/EN 60950-1 with a test voltage (60 s) of 1600 VDC.

Models				
Order code	Input voltage	Output voltage	Output current max.	Efficiency typ.
TEC 2-1210WI	4.5 – 18 VDC (12 VDC nominal)	3.3 VDC	500 mA	75 %
TEC 2-1211WI		5.0 VDC	400 mA	80 %
TEC 2-1219WI		9.0 VDC	222 mA	80 %
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		±5.0 VDC	±200 mA	80 %
TEC 2-1222WI		±12 VDC	±83 mA	82 %
TEC 2-1223WI		±15 VDC	±67 mA	81 %
TEC 2-2410WI	9 – 36 VDC (24 VDC nominal)	3.3 VDC	500 mA	76 %
TEC 2-2411WI		5.0 VDC	400 mA	80 %
TEC 2-2419WI		9.0 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		±5.0 VDC	±200 mA	79 %
TEC 2-2422WI		±12 VDC	±83 mA	82 %
TEC 2-2423WI		±15 VDC	±67 mA	81 %
TEC 2-4810WI	18 – 75 VDC (48 VDC nominal)	3.3 VDC	500 mA	75 %
TEC 2-4811WI		5.0 VDC	400 mA	80 %
TEC 2-4819WI		9.0 VDC	222 mA	81 %
TEC 2-4812WI		12 VDC	167 mA	82 %
TEC 2-4813WI		15 VDC	134 mA	83 %
TEC 2-4815WI		24 VDC	83 mA	82 %
TEC 2-4821WI		±5.0 VDC	±200 mA	80 %
TEC 2-4822WI		±12 VDC	±83 mA	82 %
TEC 2-4823WI		±15 VDC	±67 mA	82 %

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 (1 s max.)	12 Vin models: 25 V max. 24 Vin models: 50 V max. 48 Vin models: 100 V max.
Start up voltage	12 Vin models: 4.5 V (or lower) 24 Vin models: 9 V (or lower) 48 Vin models: 18 V (or lower)
Under voltage shut down	12 Vin models: 2 - 4 V 24 Vin models: 6 - 8 V 48 Vin models: 13 - 17 V
Input filter	internal capacitor
Recommended input fuse	12 Vin models: 1.0 A (slow blow type) 24 Vin models: 0.5 A (slow blow type) 48 Vin models: 0.315 A (slow blow type)
Conducted noise	EN 55032 class A or B with external components www.tracopower.com/overview/tec2wi – Application note for filter class A/B proposal
EMC immunity	EN 61000-4-2, air ±8 kV, contact ±6 kV, perf. criteria A 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 all models: Nippon chemi-con KY 220µF/100V EN 61000-4-6, 10 Vrms, perf. criteria A EN 61000-4-8 100 A/m, continuous, perf. criteria A 1000 A/m, 1 sec., perf. criteria A – ESD (electrostatic discharge) – Radiated immunity – Fast transient / surge (with external input capacitor) – Conducted immunity – Magnetic field immunity

Output Specifications

Voltage set accuracy	±1 % max.
Regulation	0.2 % max. 1 % max. 0.5 % max. 0.8 % max. (balanced load) 5 % max. (asymmetrical load 25 % / 100 %)
Temperature coefficient	±0.02 %/K max.
Ripple and noise (20 MHz Bandwidth)	75 mVp-p typ.
Start up time (constant resistive load)	10 ms typ. / 20 ms max. 10 ms typ. / 20 ms max.
Transient response time (25% load step change)	500 µs typ.
Current limitation	130 - 230 % of Iout max.
Short circuit protection	continuous, automatic recovery
Capacitive load	3300 µF max. 1680 µF max. 1000 µF max. 820 µF max. 680 µF max. 220 µF max. 1000 µF max. (each output) 470 µF max. (each output) 330 µF max. (each output)

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

General Specifications

Temperature ranges	<ul style="list-style-type: none"> – Operating (natural convection: 20 LFM, 0.1 m/s) – Case temperature – Storage temperature 	–40°C to +93°C +105°C max. –55°C to +125°C
Derating		4.8 %/K above 84°C
Humidity (non condensing)		5 – 95 % rel H max.
Isolation voltage	– I/O isolation voltage (60 s)	1'600 VDC
Isolation resistance (input/output)		1 GOhm min.
Isolation capacitance (input/output)		50 pF max.
Reliability, calculated MTBF (MIL-HDBK-217F at +25°C, ground benign)		6'621'000 h
Switching frequency		100 kHz min. (pulse frequency modulation)
Shock, vibration and thermal shock		MIL-STD-810F
Remote On/Off	<ul style="list-style-type: none"> – On: – Off: – Off idle current: 	open circuit or high impedance 2 – 4 mA current applied via 1kOhm resistor 2.5 mA typ.
Safety standards /approvals	– Certification documents	IEC/EN/UL 60950-1 www.tracopower.com/overview/tec2wi
Environmental compliance	<ul style="list-style-type: none"> – Reach – RoHS 	www.tracopower.com/products/reach-declaration.pdf RoHS directive 2011/65/EU

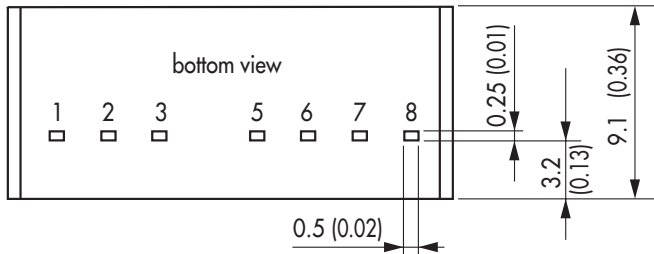
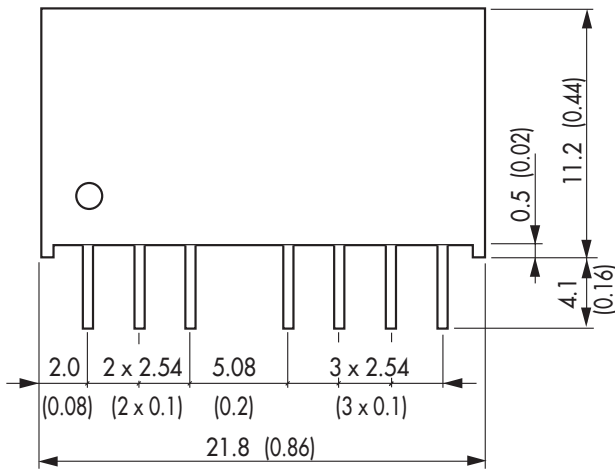
Physical Specifications

Casing material	non-conducting black plastic
Potting material	Silicone (UL 94V-0 rated)
Pin material	tinned copper
Package weight	4.5 g (0.16 oz)
Soldering profile	260°C / 10 s max. (wave soldering)

Supporting Documents: www.tracopower.com/overview/tec2wi

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

Outline Dimensions



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

NC: not connected

Dimensions in [mm], () = Inch

Tolerances: x.xx ±0.5 (±0.02)

Pin pitch tolerances ±0.25 (±0.01)

Pin dimension tolerance ±0.1 (±0.004)