

## DC/DC Converter

## TEC 6UI Series, 6 Watt

- Compact SIP8 plastic case
- Ultra-wide input range: 9 VDC to 75 VDC
- Certification according to IEC/EN/UL 62368-1
- Approved operating temperature from -40°C to +80°C
- I/O isolation 1600 VDC
- Operating up to 5000m altitude
- Short circuit protection and over current limitation
- Under voltage lockout
- Remote ON/OFF
- 3-year product warranty



The TEC 6UI series comprises isolated DC/DC converters featuring an ultra-wide input range. These next-generation converters are engineered to seamlessly replace and serve as an alternative to existing 2:1 and 4:1 input converter series—delivering uncompromising performance and cost-efficiency. With an input voltage range of 9 to 75 VDC, the TEC 3UI supports a broad spectrum of standard bus voltages, reducing the need for multiple model variants within a single application. Each model includes built-in protections such as short circuit protection, over current limitation, undervoltage lockout, and remote-control functionality. The converters are certified for an operating temperature range of -40°C to +80°C in accordance with IEC/EN/UL 62368-1 and are capable of functioning at altitudes up to 5000 meters. Housed in a compact SIP8 plastic case, the TEC 6UI series is well-suited for space-constrained applications. Available in both single and dual output configurations, these converters are ideal for a wide range of industrial applications.

### Models

Order Code	Input Voltage Range	Output 1		Output 2		Efficiency typ.
		Vnom	I <sub>max</sub>	Vnom	I <sub>max</sub>	
TEC 6-2410UI	9 - 75 VDC (24 VDC nom.)	3.3 VDC	1'800 mA			76 %
TEC 6-2411UI		5 VDC	1'200 mA			80 %
TEC 6-2419UI		9 VDC	666 mA			81 %
TEC 6-2412UI		12 VDC	500 mA			83 %
TEC 6-2413UI		15 VDC	400 mA			83 %
TEC 6-2415UI		24 VDC	250 mA			83 %
TEC 6-2421UI		+5 VDC	600 mA	-5 VDC	600 mA	80 %
TEC 6-2422UI		+12 VDC	250 mA	-12 VDC	250 mA	83 %
TEC 6-2423UI		+15 VDC	200 mA	-15 VDC	200 mA	83 %

### Input Specifications

Input Current	- At no load	3 mA typ. / 8 mA max. (3.3/5/±5 Vout) 5 mA typ. / 8 mA max. (9/12 Vout) 6 mA typ. / 10 mA max. (15/24 Vout) 8 mA typ. / 12 mA max. (±12 Vout) 13 mA typ. / 18 mA max. (±15 Vout)
	- At full load	311 mA typ. / 921 mA max.
Surge Voltage		100 VDC max. (100 ms max.)
Under Voltage Lockout		7.5 VDC typ.
Recommended Input Fuse		1'600 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: 0.5% max. dual output models: 1% max.	
	- Load Variation (0 - 100%)	single output models: 1% max. dual output models: 1.5% max. (Output 1) 1.5% max. (Output 2)	
	- Voltage Balance (symmetrical load)	dual output models: 6% max.	
	- Cross Regulation (25% / 100% asym. load)	dual output models: 5% max.	
	- 20 MHz Bandwidth	100 mVp-p max. (w/ 22 µF MLCC)	
Capacitive Load	- single output	3.3 Vout models: 2'200 µF max. 5 Vout models: 1'100 µF max. 9 Vout models: 680 µF max. 12 Vout models: 470 µF max. 15 Vout models: 470 µF max. 24 Vout models: 180 µF max.	
		- dual output	5 / -5 Vout models: 680 / 680 µF max. 12 / -12 Vout models: 330 / 330 µF max. 15 / -15 Vout models: 180 / 180 µF max.
		Minimum Load	Not required
		Temperature Coefficient	±0.03 %/K max.
		Hold-up Time	1 ms min.
	Start-up Time	30 ms max.	
	Short Circuit Protection	Continuous, Automatic recovery	
Output Current Limitation		120 - 230% of Iout max. 180% typ. of Iout max.	
	Transient Response	- Response Deviation: 5% max. (75% to 100% Load Step) - Response Time: 500 µs max. (75% to 100% Load Step)	

### Safety Specifications

Standards	- IT / Multimedia Equipment	EN 62368-1 IEC 62368-1 UL 62368-1
Pollution Degree		PD 2

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 (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: <a href="http://www.tracopower.com/overview/tec6ui">www.tracopower.com/overview/tec6ui</a>
EMS (Immunity)	- Electrostatic Discharge	Air: EN 61000-4-2, $\pm 8$ kV, perf. criteria A Contact: EN 61000-4-2, $\pm 6$ kV, perf. criteria A
	- RF Electromagnetic Field	EN 61000-4-3, 10 V/m, perf. criteria A
	- EFT (Burst) / Surge	EN 61000-4-4, $\pm 2$ kV, perf. criteria A EN 61000-4-5, $\pm 2$ kV, perf. criteria A
	- Conducted RF Disturbances	Ext. input component: 1000 $\mu$ F / 100 V EN 61000-4-6, 10 Vrms, perf. criteria A

## General Specifications

Relative Humidity		95% max. (non condensing)
Temperature Ranges	- Operating Temperature	-40°C to +80°C
	- Case Temperature	+110°C max.
	- Storage Temperature	-55°C to +125°C
Power Derating	- High Temperature	Depending on model See application note: <a href="http://www.tracopower.com/overview/tec6ui">www.tracopower.com/overview/tec6ui</a>
Cooling System		Natural convection (20 LFM)
Remote Control	- Voltage Controlled Remote (passive = on)	On: 0 to 0.5 VDC or open circuit Off: 3 to 12 VDC Refers to '+Remote' and '-Remote' Pin
	- Off Idle Input Current	1 mA typ.
Regulator Topology		Flyback Converter
Switching Frequency		420 kHz typ. (PWM) (3.3/5/ $\pm 5$ Vout models) 560kHz typ. (PWM) (other Vout models)
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 $\Omega$ min.
Isolation Capacitance	- Input to Output, 100 kHz, 1 V	50 pF max.
Reliability	- Calculated MTBF	1'668'000 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>
Environment	- Vibration	MIL-STD-202 10 g, 3 axis, sine sweep, 10-55 Hz, 1 oct/min
	- Mechanical Shock	MIL-STD-202 100 g, 3 axis, half sine, 6 ms, total 18 shocks
	- Thermal Shock	MIL-STD-202 -55°C to +125°C, 1000 cycles, 30 min each
Housing Material		Plastic (UL 94 V-0 rated)
Potting Material		Silicone (UL 94 V-0 rated)
Pin Material		Phosphor Bronze (C5191)
Pin Foundation Plating		Nickel (40 - 120 $\mu$ m)
Pin Surface Plating		Tin (120 $\mu$ m min.), bright
Housing Type		Plastic Case
Mounting Type		PCB Mount
Connection Type		THD (Through-Hole Device)
Footprint Type		SIP8
Soldering Profile		Lead-Free Wave Soldering 260°C / 5 s max.
Weight		4.6 g
Thermal Impedance	- Case to Ambient	30 K/W typ.

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: 7(a), 7(c)-I

(RoHS exemptions refer to the component concentration only, not to the overall concentration in the product (O5A rule))

- SCIP Reference Number

Oc79ed6a-c6fe-49f2-9fde-04cc87be2d91

### Additional Information

Supporting Documents

[www.tracopower.com/overview/tec6ui](http://www.tracopower.com/overview/tec6ui)

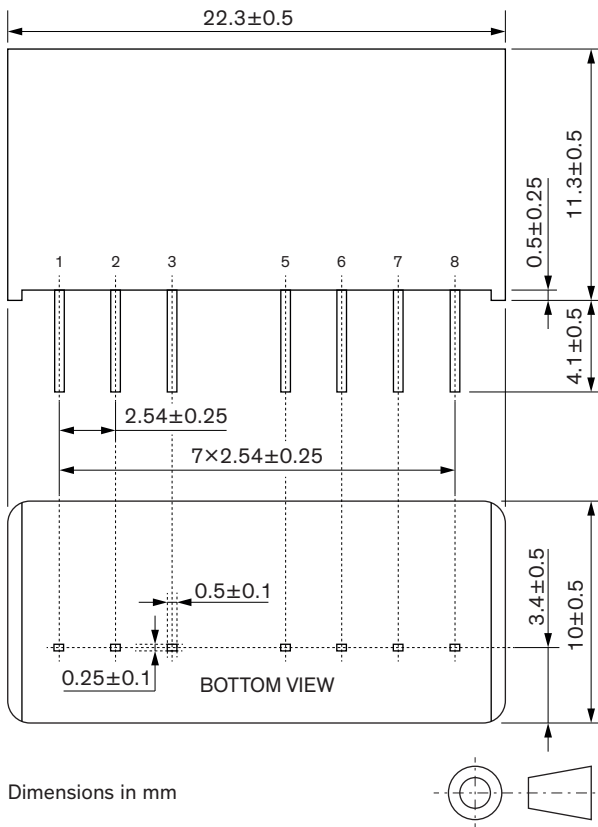
Frequently Asked Questions

[www.tracopower.com/glossary-faq](http://www.tracopower.com/glossary-faq)

Glossary

[www.tracopower.com/info/glossary.pdf](http://www.tracopower.com/info/glossary.pdf)

### Outline Dimensions



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

NC: Not connected



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