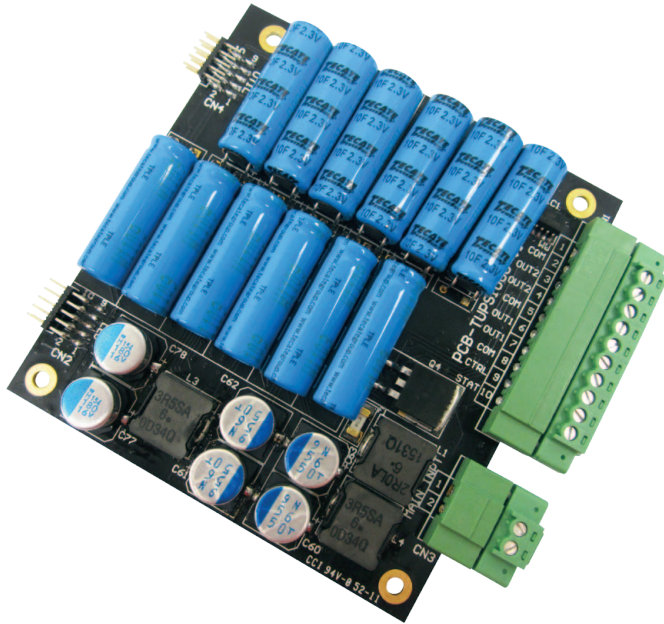


⚡ TUP1000

Ultra Capacitor SFF* Power Solution

POWER OS TRI-M
TECHNOLOGIES INC.

Rugged Power & UPS Solution

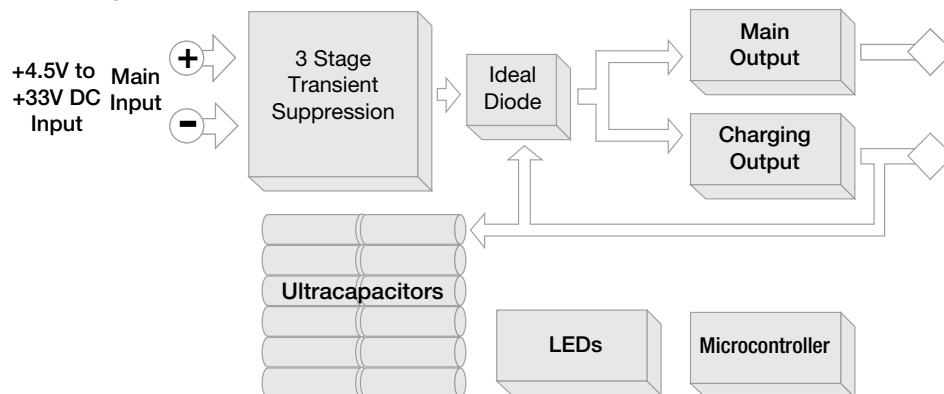


The TUP1000 is a Small Form Factor (SFF)1 DC-DC converter using ultra capacitors versus batteries to provide seamless UPS backup capabilities. This high performance power supply can produce 35 watts @ +5VDC or 42 Watts @ +12VDC.

The PC/104 footprint design supports many low power embedded systems requiring short-term power during a power loss.

The TUP1000 has a fully programmable power output of +4.5VDC to +12.6VDC — its rugged design includes transient suppression and locking terminal mating plugs.

Block Diagram



Key Specifications

- **Ultra Capacitor Backup**
Twelve ultra capacitors in series
- **Enhanced Protection**
10000W transient suppression
Active input voltage clamping
Reverse polarity, short circuit
- **Wide Input Voltages**
Ranges from +4.5V to +33V DC
- **Standard Output**
Model 1000-5 +5V @ 7A max.
Model 1000-12 +12V @ 3.5A max.
- **High Performance**
Up to 96% efficiency
- **Extended Temperature**
-40°C to +85°C / -40°F to +185°F

Advantages

- **500,000 Charging Cycles**
Low maintenance & high reliability
- **Smart Charging**
Full charge in less than 10 seconds
- **Rugged Design**
Tested to meet MIL-STD-810G²
- **Input Voltage Protection**
Protects system components
- **Small Form Factor UPS**
Compatible with many industry standard form factors

Our Capabilities

- **Application Engineering**
- **Rapid Development**
- **Engineered Systems**
- **Custom Software**
- **Industry Standards & Certification**
- **Exceptional Customer Experience**

¹ SFF* includes PC/104, PC/104-Plus, PC/104-Express™, EPIC, EBX, Mini-ITX, and SUMIT.

² For more information, see the Certificate of Compliance available at www.tri-m.com.

Specifications

Model	TUP1000-5	TUP1000-12
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Main Input

Input Voltage Range	+4.5V to +33V DC	
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Ultra Capacitors

Backup Capacity 12x10F ultra capacitors in series	0.833 farads	
Energy Capacity	260 joules	
Self-discharge Rate (see note 1)	1.67mV/sec	

Output 1

Voltage Range	4.75 to 5.25V	11.4 to 12.6V
Current	7A	3.5A
Ripple Voltage	10 to 20mV	15 to 50mV
Load Regulation	100 to 120mV	80 to 100mV
Line Regulation	<10mV	
Output Temperature Drift	100mV	
Efficiency	92%	95%

Input/Output 2

Voltage Range	6.5 to 25V	
Current (see note 2)	7A	
Ripple Voltage	80 to 100mV	
Load Regulation	<350mV	
Line Regulation	10 to 20mV	
Output Temperature Drift	150mV	
Efficiency	96%	

Note

For detailed dimensions, connector and pin spacing information, please see the *TUP1000 User Guide*.

Model	TUP1000-5	TUP1000-12
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Mechanical

PC/104 Standard		
Dimensions	90 × 96 × 11mm (3.55 × 3.775 × 0.43")	
Weight	80g / 2.82oz	

Environmental

Storage Temperature Range	-40°C to +85°C (-40°F to +185°F)	
Operating Temperature Range	-40°C to +85°C (-40°F to +185°F)	

Communication

USB	CDC and MSC	
LED Indicators	3 on-board RGB LEDs Off-board LEDs: 3 RGB LEDs or 9 single color LEDs	

Configuration

OS Support	Linux kernels 2.6.25 and later	
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Certifications



- 1) Based on an internal quiescent current of 1.4mA when the TUP1000 is in "deep power down" mode.
- 2) The onboard microcontroller will set the current limit of 3.5A or 7A, depending on the input supply capability and whether the output 2 converter is working in buck or boost switching mode.

Ordering Information

Models TUP1000-x[-Cy]-PBF

where "x" is the output voltage

- ex: TUP1000-5-PBF; 5V output, no conformal coating, RoHS
- ex: TUP1000-12-PBF; 12V output, no conformal coating, RoHS.
- ex: TUP1000-ADJ-PBF; full adjustable output, no conformal coating, RoHS.

where [-Cy] is the optional conformal coating selection

- "-CS" is silicon conformal coating
- "-CU" is urethane conformal coating
- "-CH" is HumiSeal conformal coating
- ex: TUP1000-5-CU-PBF; 5V output, urethane conformal coating, RoHS