



# Rugged TVME5100-R Single Board Computer

*The TVME5100-R is a Motorola Power Plus II Single Board Computer enhanced to withstand shock and vibration extremes in excess of the original Motorola SBC specification. Conformally coated, this rugged solution is designed for use in critical embedded systems deployed in the most demanding military and industrial environments.*

## Key Environmental Features:

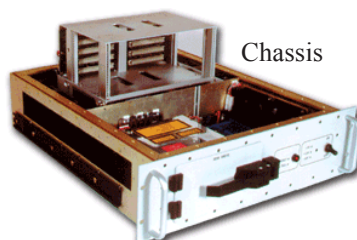
- Qualified to environmental standards of MIL STDs 810F, 901D and 167, and 461.
- Shock: MIL STD 810F, 45g's at half-sine 20 ms
- Vibration: MIL STD 167, 5g's at 50 to 500Hz sine and .05g<sup>2</sup>/Hz at 15Hz to 2KHz random
- Conformal Coating per MIL STD I-46508, urethane
- Operating temperature: 0°C to 55°C
- Altitude: -1500ft to 11,000 ft
- Humidity: 5% to 95% non-condensing with resistance to salt fog
- *Ask about our extensions to any environmental standards*

## TVME5100-R Features:

- ◆ MPC750 microprocessor with 32KB/32KB L1 cache
- ◆ 1MB of secondary backside cache
- ◆ 100 MHz front-side bus
- ◆ 512MB of on-board ECC SDRAM—expandable up to 1GB with optional RAM500 memory expansion modules
- ◆ 17MB Flash memory
- ◆ Dual IEEE P1386.1 compatible 32/64-bit PMC expansion slots
- ◆ 64-bit PCI expansion mezzanine connector allowing up to four more PMCs
- ◆ Dual 16550 compatible async serial ports
- ◆ Dual 10BaseT/100BaseTX Ethernet
- ◆ 32KB NVRAM and time-of-day clock with replaceable battery backup
- ◆ Four 32-bit timers and one watchdog timer
- ◆ On-board debug monitor
- ◆ Single VME slot even when fully configured with two PMC modules and both add-on memory mezzanines



## COTS Systems By Design



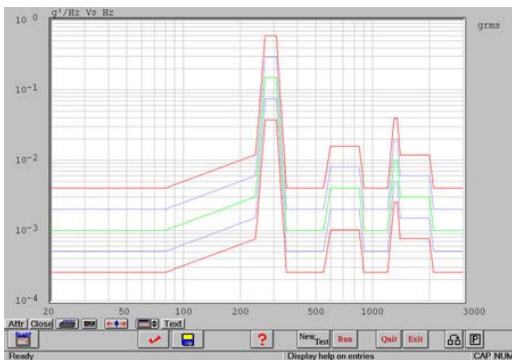
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SBCs built with surface mount technology can often meet the demands of rugged environments. The Motorola SBCs can be modified to meet environmental conditions as specified by MIL-STD-810. The boards are physically modified to pass 810 Shock and Vibration testing and electrically modified to meet front panel isolation requirements. ACT/Technico's PMC Modules can also be modified to meet the same specifications.

**ACT/Technico can help you extend the application of Motorola® COTS hardware by making mechanical enhancements and providing test services and qualification data.**

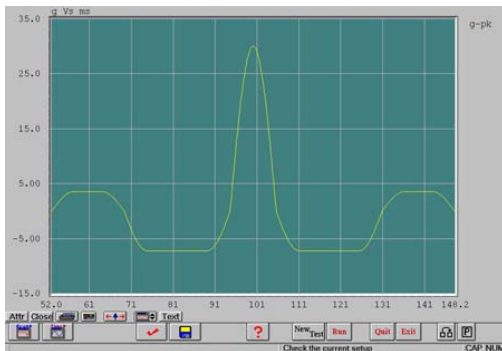
## Board Description

The LX MVME5100 delivers high levels of computing power with Motorola's PowerPlus II architecture. This rugged solution offers superior shock and vibration protection and is conformal coated. The LX MVME 5100-016x can provide excellent performance in a wide array of military applications including fixed ground installations such as radar, communications, and artillery support equipment in facilities with limited protection from the elements. Mobile ground applications include vehicle mounted equipment supporting mission critical communications, tactical artillery support, radar, ground penetrating



Sample random vibration test profile

radar and data collection. In ground applications, suitably applied conformal coatings resist the effects of dust, sand and other contaminants. Ship borne applications for the LX MVME 5100 expose equipment to the combined effects of shock, vibration, and atmospheric contaminants — including salt mist. In addition to the day-to-day pounding a ship propulsion control system endures, ship borne applications must survive shock levels resulting from the effects of conventional or nuclear weaponry. Rotary winged aircraft can rely on the LX MVME 5100 to perform mission critical tasks in demanding environments.



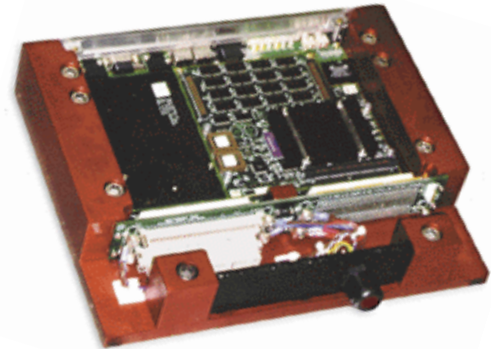
Sample shock test profile



ACT/Technico Temperature Cycle Chamber

## Testing

ACT/Technico's ruggedized SBC products are tested according to MIL-STDs 810F, 883, 467, 901D and 167; NEBS, and others as applicable. Complete documentation packages address product qualification, validation and manufacturing processes. ACT/Technico warrants all ruggedized products and specification extensions for use in the target application environment.



## Baseline Motorola MVME 5100 Specifications

### MVME5100 Processor Module

#### Processors

Microprocessor: MPC750 class  
 Clock Frequency: 450 MHz  
 On-chip Cache (I/D): 32K/32K  
 Secondary Cache: 1MB

#### Main Memory

Type: PC100 ECC SDRAM with 100 MHz bus  
 Capacity: Up to 512MB on-board, expandable to 1GB with RAM500 memory mezzanines  
 Single Cycle Accesses: 10 Read/5 Write  
 Read Burst Mode: 7-1-1-1 idle; 2-1-1-1 aligned page hit  
 Write Burst Mode: 4-1-1-1 idle; 2-1-1-1 aligned page hit  
 Architecture: 64-bit, single interleave

#### Flash Memory

Type: EEPROM, on-board programmable  
 Capacity: 1MB via two 32-pin PLCC/CLCC sockets; 16MB surface mount  
 Read Access (16MB port): 70 clocks (32-byte burst)  
 Read Access (1MB port): 262 clocks (32-byte burst)

#### NVRAM

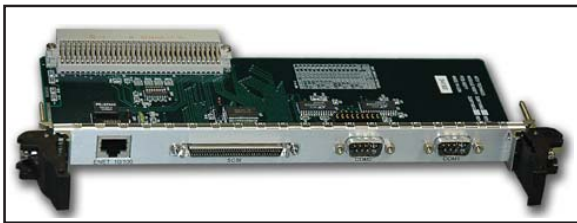
Capacity: 32KB (4KB available for users)  
 Cell Storage Life: 50 years at 55° C  
 Cell Capacity Life: 5 years at 100% duty cycle, 25° C  
 Removable Battery: Yes



## Transition Modules

ACT/Technico offers single slot rear transition module solutions compatible with both 3-row and 5-row connectors. The following features are standard:

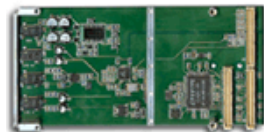
- 6U x 80mm form factor integral SCSI connector
- Four serial ports via RJ45 connectors (DTE/DCE jumpers on-board and modem support)
- Parallel port header
- Locking front panel-mount AUI connector
- SCSI Centronics connector, with removable SCSI termination resistor networks
- On-board Centronics parallel port header
- LED indicators for SCSI termination and Ethernet power



## PMC Modules

We offer a wide selection of PMC Modules. Some models can be modified to meet the above ruggedization specifications, such as the PMCStor and PMCDisk, Audio, SCSI, and various communications controllers.

Solid State PMCDisk



Audio PMC

## Order Information

Please use the part numbers below to order your rugged TVME5100-R. Standard part number includes conformal coating. Choose between Scanbe or IEEE handles. For additional configurations, Transition Modules, PMCs, and any additional products, please refer to their datasheets, or call us for assistance.

Part Number	Description
TVME5100-0161-R	450 MHz MPC750, 512MB ECC SDRAM, 17MB Flash and 1MB L2 cache, Scanbe VME handles
TVME5100-0163-R	450 MHz MPC750, 512MB ECC SDRAM, 17MB Flash and 1MB L2 cache, IEEE 1101.1 handles
<b>Documentation</b>	
V5100A/IH	MVME5100 Installation and Use
V5100A/PG	Programmer's Reference Guide

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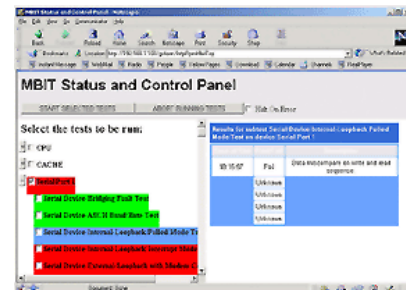
## Complete Rugged System Solutions

ACT/Technico offers a complete line of rugged supporting products in form factors ranging from mezzanines to rear I/O to 3U and 6U boards. System level ruggedization and qualification services are available as pre-defined rugged systems. Specification extensions can be tailored for specific environments on all products. Visit [www.acttechnico.com](http://www.acttechnico.com) for additional information.



## MBIT GUI Web Based Diagnostics

This Built-In self-Test (BIT) tool provides a Web based control of Motorola's Built-in Test Diagnostic Software. It also provides a GUI based point and click test selection, and color coded test status with an automatic update. It is compatible with Netscape and Internet Explorer.



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