TuffServ® 540 Rugged Recorder / Server

AMPEX

The TuffServ® 540 Recorder / Server (TS 540) redefines performance for a device smaller than a soda bottle.

Designed with a scalable architecture consistent with the Ampex Common Compute Environment™ (ACCE), the recorder / reproducer supports a wide range of applications. With its compact size, low weight, and I/O options, it can be used wherever it is needed.

Designed for Unique Environments

With dimensions of 8.5" x 4.25" x 2.9" (215mm x 108mm x 74mm), the TuffServ 540 comes in at approximately 105 cu. Inches (1.7 liters) and weighs less than 10 lbs (4.5Kg). Combined with rugged, MIL-Spec qualifications, it is uniquely suited for applications where performance cannot be sacrificed, despite installation challenges.

Features

- *Greater than 800 MB/s sustained network throughput*

- *Small and lightweight 105 cu. inches, and less than 10 lbs.*

- *Detachable Memory Module Capacities up to 16 TB*

- *High Speed I/O Interface using XMC for user options*

- *Built for Rugged, MIL-STD-810 Environments with MIL-STD Power and Connectors*

- *Options for Additional or Customized I/O via miniPCIe slots*

Performance, Security and Capacity

Based on the standardized processing platform using Red Hat Linux version 7.1 common amongst all TuffServ models, the TuffServ 540 celebrates sustained data rates in excess of 800 MB/sec for onboard data storage applications. The base TuffServ 540 provides two 1000Base-T interfaces plus a 100Base-T port for control/status, as well as expansion capability through a high-speed XMC interface site with options for 10 Gigabit Ethernet (up to 4 channels), VITA 17.1 sFPDP (two or four channels) and other I/O types. Additional I/O is available via a miniPCIe site, for MIL-STD-1553B, etc.

To support this range of interfaces, the TuffServ 540 provides a high-capacity, high performance detachable memory module using a pair of NVMe SSDs, offering total capacities up to 16TB and higher, as memory technology matures. The memory modules leverage rugged COTS media solutions, further qualified by Ampex to meet the requirements of challenging programs.

Designed for Flexibility

The heart of the TuffServ 540 is a standardized, rugged pluggable processing module, integrating the CPU with memory and I/O interfaces such as mini-PCI Express, XMC, USB, Ethernet and serial ports. This design provides opportunities to expand and adapt the platform for new or unique requirements, as well as provide options such as MIL-STD-1553 control and GPS time synchronization. This also facilitates product reliability and long-term supply by isolating the intricacies of the CPU from the overall system; as CPU technology evolves, alternative modules can be used without changing the system's internal and external interfaces.
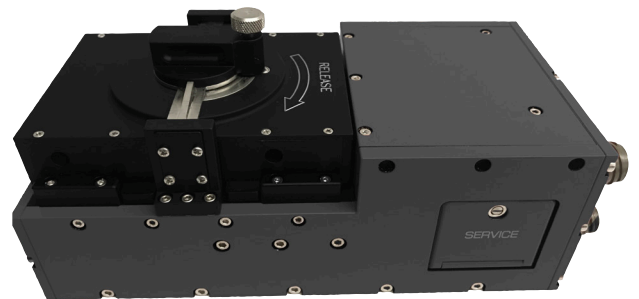
Specifications[1]

System

CPU Subsystem	Intel Core i7-5650U 5th Generation "Broadwell-U" Series
	Dual Core, 4MB Cache, 2.20GHz (3.20GHz Turbo), 8GB DDR3L-1600 Memory, TPM 1.2
Network Interfaces:	Two 1000Base-T Gigabit Ethernet
	One 10/100Base-T Fast Ethernet
Optional Interfaces[2]:	XMC Site: Additional Gigabit & 10 Gigabit Ethernet ports, sFPDP Channels, Video
	miniPCIe Site: MIL-STD-1553B, Others
Removable Storage:	Detachable Media Module based on NVMe SSDs
Network Protocols:	NFSv4, NFSv3, CIFS/SMB, FTP, TCP, UDP
Operating System:	Red Hat Linux 7 (DISA STIG compliant)
RMM Storage Capacity:	Up to 16 TB
Encryption:	Advanced Encryption Standard (AES), 256 bit keys, FIPS 197 Validated

Performance[3]

Internal Data Rate:	900 MBytes/sec Sustained
Payload Data Rate:	800 MByte/sec Sustained

Power

Power:	28VDC per MIL-STD-704A with under/over voltage protection

Mechanical

Dimensions:	2.9" H x 4.25" W x 8.5" D
	(74mm x 108mm x 215mm)
Mounting:	Hard Mount via base screws; Optional mounting tray can be designed
Weight (System):	10lbs (4.5Kg)

Environmental

Temperature:	Operating	-40ºC to +55ºC
	(Extended Range)	-40ºC to +71ºC (With Suitable Conduction Cooled Surface)
	Non-operating:	-45ºC to +85ºC
Humidity:	0% to 95% RH (MIL-STD-810F, Procedure III)	
Vibration:	4.6g$_{rms}$ (active) / 9.8g$_{rms}$ (endurance), MIL-STD-810Fv	
Shock:	20g (half sine, 11ms), MIL STD-810F	
EMI Compatibility:	MIL-STD-461F	
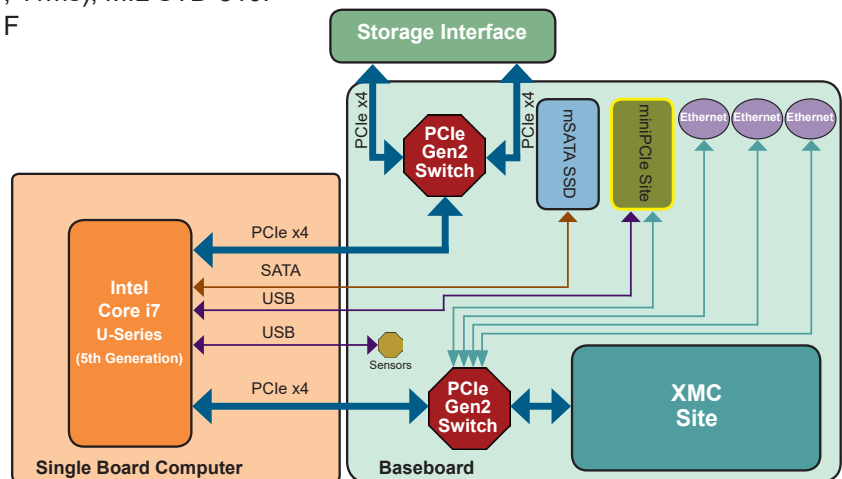
[1] Specifications subject to change without notice.
[2] Contact Ampex for availability of options.
[3] Preliminary data.