TELEDYNE LECROY
Everywhere**you**look™

Summit™ T516 Protocol Analyzer
for PCI Express® 5.0 and Compute Express Link™

Key Features

Find errors fast
- One button error check
- Fast upload speed
- Large trace memory
- Powerful triggering/filtering

See and understand the traffic
- Get useful information
- More choices of data views
- More ways to analyze data
- Custom decoding and reports

Data capture
- 100% data capture at 32.0 GT/s on all link widths up to x16

Deep memory buffer
- Up to 256 GB depth

PCIe storage protocols supported
- NVM Express
- NVMe-MI
- SATA Express (ATA/AHCI-PCIe)
- SCSI Express (SOP-PQI)

Virtualization protocols
- SRIOV
- MRIOV
- ATS

Sideband signaling
- SMBus
- CLKREQ#
- WAKE#
- PERST#

Supports CXL
- Supports all three CXL sub-protocols and all CXL device types: CXL.io, CXL.mem, and CXL.cache

Supports Lane Margining

Supports MultiPort™ analysis

Supports PCIe IDE/DOE

The Summit T516 offers advanced features such as: support for PCI Express® 5.0 and CXL™ Specification; data rates of 2.5 GT/s, 5.0 GT/s, 8.0 GT/s, 16.0 GT/s and 32.0 GT/s; full data capture on bidirectional link widths of x1, x2, x4, x8, and x16; and up to 256 GB of trace memory. The product is ideal for high-performance protocol development for add-in boards, servers and workstations, and for customers currently working on PCIe® 4.0 or 5.0 or who wish to support PCIe 5.0 or CXL in the future.

Advanced Protocol Analysis

The Summit T516 protocol analyzer features support for the PCIe 5.0 technology at speeds of up to 32.0 GT/s and up to x16 link widths. It also provides up to 256 GB of trace memory recording capability. The Summit T516 can be controlled through USB or can be remotely networked and controlled through a 1000baseT Ethernet connection. It can also be synchronized with other high-speed protocol analyzers or oscilloscopes from Teledyne LeCroy.

The Summit T516 is also a fully featured Protocol Analyzer for Compute Express Link (CXL). Support is provided for CXL.io, CXL.mem and CXL.cache with full decoding from the FLIT layer to the CXL link and transaction layers.

Capturing is performed by connecting a PCIe 5.0 interposer or probe between the Host System/Root Complex and the Device Under Test (DUT). Interposers and probes are offered in various link widths.

The Summit T516 for PCI Express 5.0 and CXL provides multiple views including: CATC Trace™; Spreadsheet View; LTSSM State View; and other focused views to assist users in analyzing how PCI Express protocol

components work together, facilitating more effective problem diagnosis. These various interfaces help find errors fast by utilizing precise triggering, filtering and error reporting. Together they compose a powerful and intuitive expert software system, embedding detailed knowledge of the intricacies of the protocol hierarchy as defined in the specification.

Graphical displays have been optimized for fast and easy navigation. Users are alerted as violations are detected at all layers of the protocol and can easily drill down into areas of interest. Users can also quickly and easily collapse and/or hide fields that are not relevant. Protocol data can be viewed in several ways from logical to chronological, and by events unique to PCI Express or CXL.
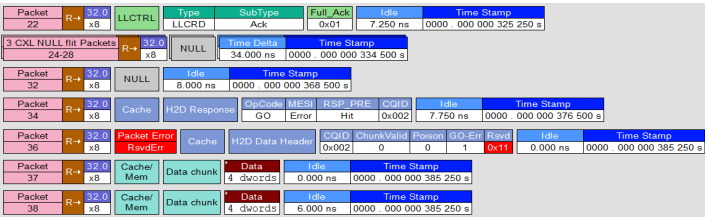
All Teledyne LeCroy PCI Express and CXL protocol analyzers feature a hierarchical display of protocol traffic summaries, detailed error reports, powerful scripting, and the ability to create user-defined test reports, which allow developers to troubleshoot intricate problems and finish their projects on time.

PCIe 5.0 Trace

Users of Teledyne LeCroy systems appreciate the rich library of decodes and analysis capabilities that are available on all of Teledyne LeCroy's PCIe® test tools.

The Summit™ T516 offers extensive decoding for Storage protocols like NVM Express® and SATA Express®. DataCenter monitoring technology such as NVMe queue characterization, NVMe-MI™ and out-of-band SMBus signaling which is decoded and synchronized with PCI Express® can be analyzed for protocol traffic issues. If IO virtualization is important SRIOV and MRIOV is also decoded and analyzed.

CXL™ Trace

Specifications

Host Machine Minimum Requirements	64-bit (x64) versions of Windows® 11, Windows 10, Windows Server 2016, and Windows Server 2019. o The latest Service Pack available for the Windows OS in use is required. 4 GB of RAM; storage with at least 2 GB of free space for the installation of the software and additional space for recorded data; display with resolution of at least 1024x768 with at least 16-bit color depth; USB 2.0/3.0/3.1 port and/ or 100/1000 Mbps Ethernet network interface. For optimal performance, please refer to our recommended configuration in the product documentation.
Recording Memory Size	Up to 256 GB
Data Rates Supported	2.5 GT/s, 5.0 GT/s, 8.0 GT/s, 16.0 GT/s, 32.0 GT/s (PCI Express 5.0)
Ports	USB 3.0 Type C connector, Trigger in and out, GB/s ethernet port, Sync in/out expansion port
Switches/Buttons	Power Switch, Navigation Button
LEDs	Power LED, Status LED, Trigger LED, four (4) groups of eight (8) Upstream/Downstream LEDs
Displays	Four Data Rate Displays (2.5 GT/s, 5.0 GT/s, 8.0 GT/s, 16.0 GT/s, 32.0 GT/s), LCD Menu Display
Dimensions and Weight	458 x 176 x 445 mm (18" x 6.9" x 17.5"), 17.23 Kg (38 lbs)
Power Requirements	90 - 264 VAC, 47 - 63 Hz, 1500W
Environmental	Temperature (operating): 5° to 40°C (41° to 104°F) Temperature (non-operating): -20° to 60°C (-4° to 140° F) Humidity (operating): 5% to 80% RH (non-condensing) at <=30°C, 50% max RH (non-condensing) at 40°C Humidity (non-operating): 5% to 95% max RH (non-condensing)

Additional Features

- ✓ Protocol Hierarchical Display
- ✓ Spreadsheet View
- ✓ Queue Utilization
- ✓ NVMe
- ✓ SATA Express
- ✓ NVMe-MI
- ✓ SMBus

- ✓ CXL Analysis
- ✓ ZeroTime™ Search
- ✓ Dword View
- ✓ LTSSM View
- ✓ Header Field Viewer
- ✓ Config Spec Viewer
- ✓ TLP Packet Script Decoding

- ✓ Timing Calculator
- ✓ Trigger/Filter Control
- ✓ Performance Metrics
- ✓ Expert Triggering
- ✓ Trace Expert
- ✓ Graphical Bus Utilization View
- ✓ Verification Script Engine

- ✓ 1 GB/s Ethernet & USB 3.0
- ✓ TCG Decoding of Enterprise, Opal, and Pyrite
- ✓ Supports PCIe Integrity and Data Encryption (IDE)

Ordering Information

Product Description	Product Code
Summit T516 (licensed as a Gen5 x16 analyzer at 8GB)	PE500AAA-X
Summit T516 (licensed as a Gen5 x8 analyzer at 8GB)	PE501AAA-X
Summit T516 (licensed as a Gen5 x4 analyzer at 8GB)	PE502AAA-X
Summit T516 (licensed as a Gen4 x16 analyzer at 8GB)	PE503AAA-X
Summit T516 (licensed as a Gen4 x8 analyzer at 8GB)	PE504AAA-X
Summit T516 (licensed as a Gen4 x4 analyzer at 8GB)	PE505AAA-X

Local sales offices are located throughout the world. Visit our website to find the most convenient location.

1-800-5-LeCroy • teledynelecroy.com

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