

# Summit™ T48 Protocol Analyzer for PCI Express® 4.0



## 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 16.0 GT/s on all link widths up to x8

### Deep memory buffer

- Up to 64 GB depth

### PCIe storage protocols supported

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

### Virtualization protocols

- SRIOV
- MRIOV
- ATS

### Out of band signaling

- SMBus
- CLKREQ#
- WAKE#
- PERST#

### BitTracer™

### NVMe Enhanced Mode

The Summit T48 offers advanced features such as: support for PCI Express 4.0 Specification; data rates of 2.5 GT/s, 5.0 GT/s, 8.0 GT/s, and 16.0 GT/s; full data capture on bidirectional link widths of x1, x2, x4, and x8; and up to 64GB 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® 3.0 or who wish to support PCIe 4.0.

## Flexible Hardware

The Summit T48 PCIe 4.0 Protocol Analyzer is a high-end analyzer that offers important analysis features for new PCIe 4.0 application development. While sharing application compatibility with the previous protocol analyzer platforms, the Summit T48 can record traces at speeds of 2.5, 5.0, 8.0 and 16.0 GT/s. Capturing is performed by connecting a PCIe 4.0 interposer to the Device Under Test (DUT). Interposers are offered in link widths of x1, x2, x4, and x8. Know that your data is accurate through reliable and complete decodes of Transaction Layer Packets (TLPs), Data Link Layer Packets (DLLPs), and all primitives for PCI Express for up to 8 lanes. Setting up and taking a trace is simple to do without the worry of extra plugin platforms or complex networking issues.

The Summit T48 for PCI Express 4.0 utilizes the CATC Trace™, Spreadsheet View, LTSSM State View, Bit Tracer View and other focused views to assist users in analyzing how PCI Express protocol components work together in diagnosing problems. These various interfaces help find errors fast by using the powerful

triggering, filtering and error reporting. View meaningful reports about performance and protocol behavior in real time, and post captured traffic. These diverse views create a powerful and an intuitive expert software system, embedding detailed knowledge of the protocol hierarchy and intricacies as defined in the protocol specification. Graphical displays have been optimized for fast and easy navigation through a captured traffic session. Users are alerted as violations are detected at all levels of the protocol layering, and can easily drill down to areas of interest or collapse and 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.

All Teledyne LeCroy 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. 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™ T48 is up to the challenge by offering decoding for Storage protocols like NVMe Express® and SATA Express®. DataCenter monitoring technology such as 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. Two Summit T48 protocol analyzers can be expanded together to support PCIe® 4.0 16.0 GT/s at x16 link width applications.

Want to get down to the byte level and see traffic just before lane alignment? BitTracer™ software option records the bytes exactly as they come across the link, allowing debugging of PHY layer problems and combining the features of a logic analyzer format with a decoded protocol analyzer format.

| Specifications                    |  |
|-----------------------------------|--|
| Host Machine Minimum Requirements | Microsoft Windows® 10, Windows 8, Windows Server, Windows 7, Windows Server 2008R2; 2 GB of RAM; Storage with at least 1 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 port and/or 100/1000baseT Ethernet; For optimal performance, please refer to our recommended configuration in the product documentation. |
| Recording Memory Size             | Summit T48 Protocol Analyzer: Up to 64 GB  |
| Data Rates Supported              | 2.5 GT/s, 5.0 GT/s, 8.0 GT/s and 16.0 GT/s (PCI Express® 4.0)  |
| Ports                             | Summit T48 Protocol Analyzer: Downstream and Upstream reference clock inputs, USB 3.0 Type B connector, Trigger in and out, 1 GB/s ethernet port, Sync in/out expansion port   |
| Display Panel                     | Summit T48 Protocol Analyzer: 122x32 Pixel Graphic display   |
| LEDs                              | Power LED, Status LED, Trigger LED, Four Data Rate LEDs (2.5 GT/s, 5.0 GT/s, 8.0 GT/s, 16.0 GT/s), 16 Activity LEDs, Training LED  |
| Dimensions and Weight             | Summit T48 Protocol Analyzer: 114 x 19 x 207 mm (16.99" x 3.45" x 14.35"), 4.9 Kg (11 lb)<br>Slot Interposer: 100 x 198 x 170 mm (3.9" x 7.8" x 6.7"), 1.4 Kg (3 lb)   |
| Power Requirements                | 100-240 VAC, 50-60 Hz, 230W  |
| Environmental                     | Operating: 0 to 55°C (32 to 131°F)<br>Non-operating: -20 to 80°C (-4 to 176°F)<br>Humidity: 10 to 90% non-condensing   |

## Additional Features

- ✓ Protocol Hierarchical Display
- ✓ Spreadsheet View
- ✓ Queue Utilization
- ✓ NVMe
- ✓ SATA Express
- ✓ NVMe-MI
- ✓ SMBus
- ✓ 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
- ✓ Expert Graphical Bus Utilization View
- ✓ Verification Script Engine
- ✓ 1 GB/s Ethernet & USB 3.0
- ✓ PCIe LinkExpert™

## Ordering Information

### Product Description

Summit T48 (licensed as a Gen4 x8 analyzer, no probes or cables) Hardware/Software Bundle  
Summit T48 (licensed as a Gen4 x4 analyzer, no probes or cables) Hardware/Software Bundle

### Product Code

PE170AAA-X  
PE171AAA-X

Gen4x1 Interposer (includes Gen4x1 Interposer Card and (2) two high speed connector cables)  
Gen4x4 Interposer (includes Gen4x4 Interposer Card and (2) two high speed connector cables)  
Gen4x8 Interposer (includes Gen4x8 Interposer Card and (4) four high speed connector cables)

PE125UIA-X  
PE124UIA-X  
PE123UIA-X



Local sales offices are located throughout the world.  
Visit our website to find the most convenient location.  
1-800-5-LeCroy • [teledynelecroy.com](http://teledynelecroy.com)

