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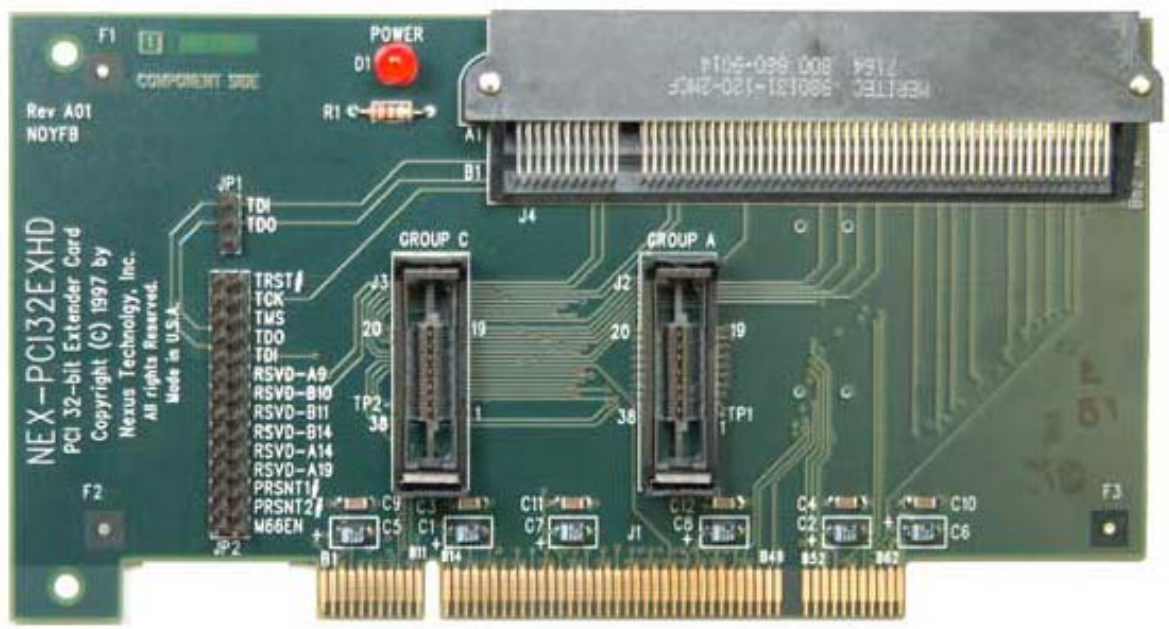
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NEXUS TECHNOLOGY

PCI 32-bit Bus Adapter and Analysis Software for Tektronix Logic Analyzers

NEX-PCI32EXHD3/5



- High Density connectors provide quick convenient connection to the PCI bus
- Disassembly of the PCI Bus
  - Cycle Identification
  - Config Cycle decoding including register evaluation
  - Ability to selectively ignore Idle and Wait States
- Extender card design
- Logic Analyzer Setup Software gets you up and running fast
- Unique features when using a TLA600 or TLA700
  - Timing Analysis to 8GHz (125ps) on each channel
  - Simultaneous State and Timing acquisition on each channel *
  - Trigger on setup/hold violations on all channels

*Please contact us for information on other PCI adapters including: a PCI 32/64-bit card.

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General Description

PCI32X Disassembly Software

The included NEX-PCI32X disassembly software executes on the Tektronix Logic Analyzer. This software decodes bus transactions and displays information in easily understood text form, just like a typical Tektronix microprocessor disassembler. All PCI Cycle types are identified and Config cycles are decoded to reflect the meaning of the registers. For instance, Command and Status registers are completely evaluated, with each bit's state being presented in easy-to-read text (see Fig. 1). Device information is translated according to Class, sub-Class, and Type to inform the user as to what device (IDE disk, Video controller, network interface, etc.) is being accessed (see Fig. 1).

It is also possible to filter the data display to show only those cycle types of interest. The user can choose to display or suppress Memory, I/O, or Config cycles to permit easy and quick analysis of only those cycles of interest. Figure 4 shows the same area of acquired data as that in Figure 1, but with Memory and I/O cycles suppressed

Another feature of the disassembly software is its ability to intelligently acquire PCI data. By taking advantage of the data clocking power built in to the Tektronix Logic Analyzers the disassembly software is able to acquire only the PCI bus cycles and ignore Idle and Wait states. This means that the user is able to make optimum use of the acquisition card's memory and see more bus transactions. For debug purposes the user also has the ability to override this function and acquire data on every PCI CLK rising edge to permit the user to see all of the bus traffic including the Idle and Wait states.

Timing Analysis

Timing analysis of the PCI bus can be done at the maximum asynchronous rate of the Tektronix Logic Analyzer. For example the TLA600/700 system with a minimum of 102 channel acquisition module can acquire timing data at 8GHz (125ps) on each channel. Fast timing acquisition and low capacitive loading (the passive NEX-PCI32EXHD5/3 adapter module and the < 2pf/P6434 and 0.7pf/P6860 logic analyzer probe) provide excellent timing analysis on each monitored channel of the PCI bus.

NEX-PCI32EXHD5/3 Adapter Module

The NEX-PCI32EXHD5/3 adapter provides a quick convenient connection to standard Tektronix logic analyzers. It requires the use of two Tektronix P6434/P6860 high density probes for connection to the TLA600/700 or a DASMTIF for connection to a DAS/TLA500. Please call for information on a PCI interface adapter that is not an extender card and supports 64-bit PCI applications. The 64-bit adapter also has a Universal card edge that will work in either 3.3V or 5V applications.

The NEX-PCI32EXHD5/3 extends the PCI bus approximately 3.5inches in etch length. Depending on the design of the system, users may experience difficulties with this. The Logic Analyzer attaches to the NEX-PCI32EXHD adapter using a high density impedance matched connector. The typical Logic Analyzer loading is < 2pf/P6434 and 0.7pf/P6860. High speed Schottky clamping diodes have been added to prevent the extra etch length from causing unwanted reflections

The NEX-PCI32EXHD5/3 adapter is available for 5 volt (NEX-PCI32EXHD5) and 3.3 volt (NEX-PCI32EXHD3) applications. Please specify the proper part number when ordering.

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Timestamp

All acquired data is timestamped on Tektronix logic analyzers; no acquisition memory is used to accomplish this. The timestamp resolution on the TLA600/700 system is 125ps, and 10ns on the DAS9200 and TLA510/20.

Correlation

While the NEX-PCI32EXHD5/3 package is being used with a Tektronix logic analyzer to monitor the PCI activity, another acquisition module can be used to monitor activity elsewhere within the system. The results of the two acquisitions can be correlated in time to determine the sequence of actions that occurred. For instance, the system microprocessor could be monitored and correlated with bus activity to verify CPU and PCI bus communication.

Setup/Hold Triggering

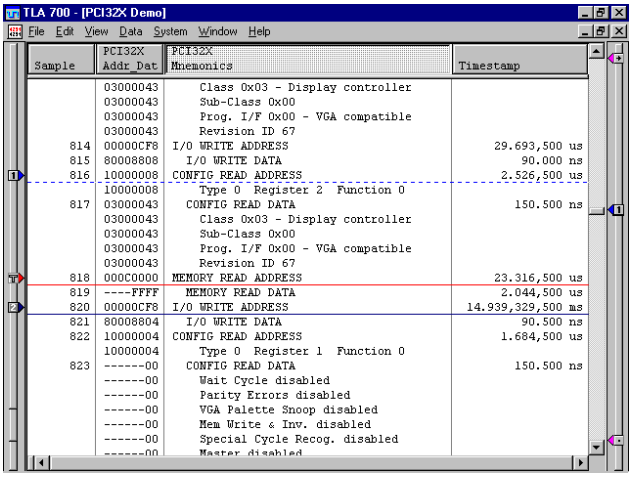
Setup and hold specifications can be verified, and margins tested, using the TLA600/700. Each channel group (address, data, control, etc..) or individual channel can have a different setup time and hold time violation set as a fault trigger. If any individual channel or any channel in a group is ever in violation of the specified setup and hold time, the logic analyzer will stop and show the violation. The timing resolution of the acquired data at the violation point is 8GHz (125ps).

Setup and hold margin testing can be done by altering the setup and hold times set for the violation trigger in 125ps increments. Changing these values until a violation occurs will show the actual setup and hold of the system under test.

Simultaneous State and Timing Acquisition

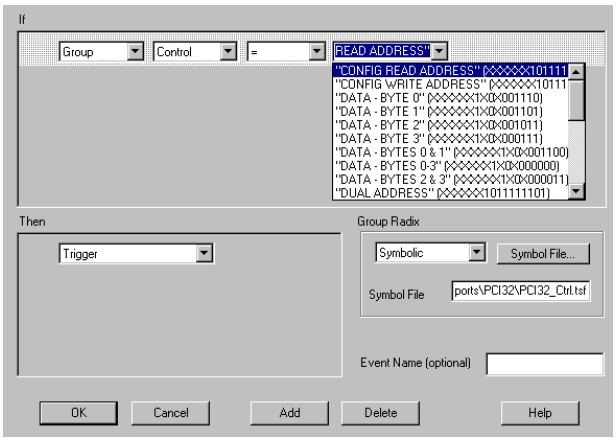
The Tektronix TLA600/700 Logic Analyzer offers the unique capability of being able to acquire timing and state data through the same probes at the same time. For example, a user is able to view timing data acquired at 125ps resolution, with state data acquired synchronously (for instance, using NEX-PCI32EXHD5/3 custom clocking or clocking on every rising edge of CLK). This resolution gives the hardware designer the ability to easily determine edge relationships between any signal without having to deal with the inconvenience and loading problems that are inherent when forced to double-probe with individual state and timing acquisition cards.

Disassembly (State Analysis)



PCI cycles are identified and Config cycles are decoded. Device information is translated according to Class, sub-Class and Type.

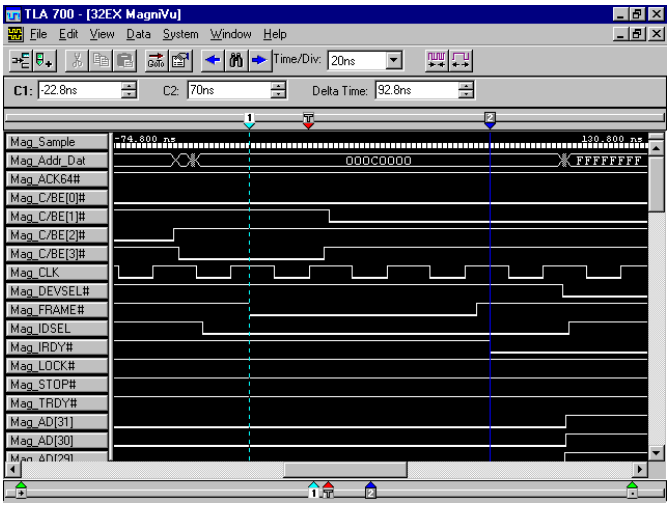
Triggering



Trigger on pre-defined PCI cycles

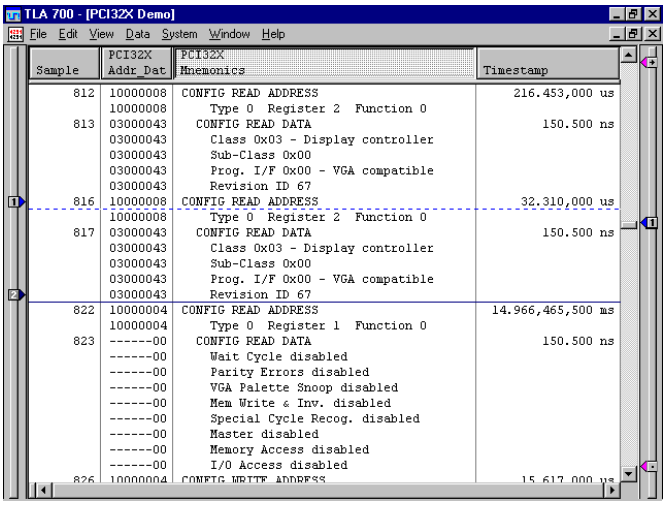
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Timing Analysis



125ps acquisition on each channel provides excellent timing analysis. Each channel is labeled with the appropriate PCI signal name. Bus format display of grouped signals shown.

Disassembly (with Data Filtering)



Same disassembly display with Memory and I/O cycles supressed.

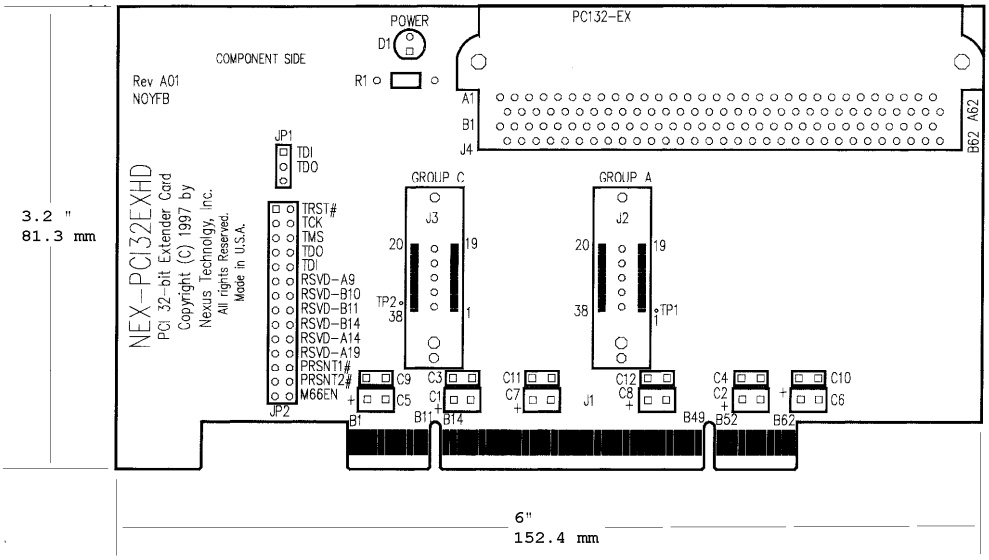
Tektronix Logic Analyzers Supported

TLA600 or TLA700 with a minimum of 102 channel acquisition module (requires 2-P6434/P6860 probes from Tektronix)

TLA510 or TLA520 (one acquisition module used: requires one DASMTIF probe adapter from Tektronix)

DAS9200 with a 92A96 or 92C96 (any memory depth: requires one DASMTIF probe adapter from Tektronix)

Mechanical Outline



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Ordering / Contact Information

Part Number NEX-PCI32EXHD3: 3.3 Volt 32-bit PCI Bus Support &Analysis Software

Or

Part Number NEX-PCI32EXHD5: 5 Volt 32-bit PCI Bus Adapter & Analysis Software
Both include: NEX-PCI32EXHD 32-bit Adapter Board (5 or 3.3 volt version)
Software for DAS9200, TLA510/520 3 1/2" floppy, TLA600/700 3 1/2" floppy
Support for DAS9200 5 1/4" drive available upon request
Manual

Postal: Nexus Technology, Inc.
78 Northeastern Blvd. #2
Nashua, NH 03062

Telephone: 877-595-8116

Fax: 877-595-8118

Email: support@nexustechnology.com
quotes@nexustechnology.com
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Website: www.nexustechnology.com

Placing an Order

Credit Card orders can be placed directly at 877-595-8116.
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