NEX-PCI32EXHD

PCI Bus Adapter Users Manual

Including these Software Support packages:

PCI32X PCI32X68

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1.0 OVERVIEW

1.1 General Information

The NEX-PCI32EXHD adapter has been designed to provide quick and easy connections to interface a 68, 102, or 136-channel TLA600/700, a 92A96, or a 92C96 acquisition module to a 32-bit PCI backplane. (The PCI designation refers to the Peripheral Component Interconnect Local Bus specification.) Connections are made through P6434 probes when using a TLA600/700, and through a DASMTIF interface when using a 92A/C96 card. Both the P6434 probes and the DASMTIF are available from Tektronix.

Two different NEX-PCI32EXHD cards are available. One supports a +5V target; the other supports a +3.3V target. Each card has its edge connector keyed for the specific voltage support, and cannot be plugged into a wrong slot. Two different boards were necessary to prevent accidental damage that might be caused by accidentally plugging a +3.3V target into a +5V slot.

The included NEX-PCI32X SW permits the acquisition of all PCI bus cycles, ignoring all Wait and Idle cycles (although it is possible to acquire these cycles if desired). The software also post-processes the information to give the user complete disassembly of the bus transactions. Instead of simply viewing the data in raw form, all cycles are evaluated and, in the case of any Configuration transactions, complete information on the type of transaction is displayed in easy-to-read form.

Please note that this manual uses some terms generically. For instance, references to a 92A96 acquisition card apply to a 92C96 acquisition card; references to the DAS9200 apply equally to the TLA500; and references to the TLA700 apply to TLA600 or aTLA700 with a TLA704 or TLA711 chassis with one or more 7L2/3/4 or 7M2/3/4 acquisition cards.

Appendix D is a silk-screen print of the NEX-PCI32EXHD Adapter board. Referring to this drawing while reading the manual is suggested.

This manual assumes that the user is familiar with the PCI Local Bus specification and the Tektronix TLA600/700, DAS9200, or TLA500 Logic Analyzer. Also, in the case of the TLA600/700, it is expected that the user is familiar with Windows 95.

If 5¼" DAS floppies are needed, please contact Nexus Technology. See Appendix F for contact information.

2.0 SOFTWARE INSTALLATION

Three 3½" diskettes have been included with the NEX-PCI32EXHD Bus Adapter. Two are for use with the TLA600/700 series, the other is to be used with a DAS9200 or TLA500.

2.1 TLA600/700

The NEX-PCI32X software is loaded in the same method as other Win95 programs. Choose which support is to be loaded: use the diskette labeled for 68-channel support with a 68-channel acquisition card; use the disk labeled 102-channel support for with a 102- or 136-channel card. Place the NEX-PCI32SW Install disk in the floppy drive of the TLA600/700. Select **Control Panel** and run **Add/Remove Programs**, choose **Install**, **Next**, then **Finish**. Add/Remove will then run SETUP.EXE on the floppy and install the PCI32X support in its proper place on the hard disk.

To load PCI32X support into the TLA600/700, first select the desired Logic Analyzer card in the Setup screen, select Load Support Package from the File pull-down, then choose PCI32X and click on **Okay**.

2.2 DAS9200

The included diskette should be loaded onto the DAS9200 using the Install Application function. This function is available from the Disk Services menu of the DAS. For more information, refer to the Tektronix DAS9200 or TLA500 System User's Manual.

Load the desired support from within the 92A96 Config menu by choosing "PCI32X Support" and pressing <RETURN>. The channel grouping, clocking and symbols will then be loaded.

3.0 CONFIGURING the NEX-PCI32EXHD BUS ADAPTER

3.1 General Information

Not all 32-bit PCI signals are monitored by either the DAS9200 or the TLA600/700. (Refer to Table 1 or Table 2 for a list of acquired signals.) The remaining signals have been brought to a 2x14 header so that they can be monitored, if desired, simply by connecting unused data channels to them. The signals are on the pins nearest the signal names. The leftmost row of pins (opposite the signals) are all connected to signal ground.

Use the supplied jumper to short or break the connection between TDI and TDO (JP1). If the target card does not support JTAG Boundary Scan then the two pins should be shorted together.

4.0 CONNECTING to the NEX-PCI32EXHD ADAPTER

4.1 General

The NEX-PCI32EXHD is an extender card that is also designed to permit monitoring the PCI bus signals. This permits the user to see exactly what is happening at the target. It is important to note that using the card as an extender will violate the PCI specification for stub length. Every effort has been taken to keep trace length as short as possible. To enhance signal integrity, Schottky diode bus terminators have been added to each signal to reduce any signal reflections or voltage spikes. It is entirely possible, however, that placing a target card onto the NEX-PCI32EXHD extender will result in improper operation of the target card.

4.2 TLA600/700

When using a TLA600/700 with the NEX-PCI32EXHD adapter board it is necessary to use the P6434 high-density probes for connecting to the board. Each P6434 probe consists of one high-density probe tip (which connects to the adapter board) and two module ends (which connect to the acquisition card). It is important to note that where the module ends connect to the acquisition card will depend on how many channels the acquisition card has. Be very careful in noting where Pin 1 is on each probe tip, and follow the P6434 Mass Termination Probe manual for instructions on applying the labels.

When using a 7L3/4 or 7M3/4 102/136-channel acquisition module, the necessary acquisition data sections are A0-A3 and C0-C3. One P6434 plugs onto the Group A connector on the 32EXHD and then connects to the Orange (A0 and A1) and Tan (A2 and A3) locations on the acquisition card. The second P6434 plugs onto the Group C connector on the 32EXHD and then connects to the Gray (C0 and C1) and White (C2 and C3) locations on the acquisition card. Table 1 shows the wiring and Channel Grouping for the 102/136-channel TLA600/700 NEX-PCI32EXHD connection.

When using a 7L2 or 7M2 68-channel acquisition module, the necessary acquisition data sections are A0-A3, C2, C3, D1, and D0. One P6434 plugs onto the Group A connector on the 32EXHD and then connects to the Orange (A0 and A1) and Tan (A2 and A3) locations on the acquisition card. The second P6434 plugs onto the Group C connector on the 32EXHD and then connects to the Yellow (D0 and D1) and White (C2 and C3) locations on the acquisition card. Table 2 shows the wiring and Channel Grouping for the TLA600/700 when used with the NEX-PCI32EXHD adapter.

4.3 92A96

When using a 92A96 or 92C96 acquisition card, connection to the 32EXHD is made through the DASMTIF interface adapter. Connect the A Probe from the adapter to the Group A connector. Connect the C Probe to the Group C connector. Table 1 shows the wiring and Channel Grouping for the 92A96 when used with the NEX-PCI32EXHD adapter.

Group Name	Signal Name	PCI Pin #	TLA600/700 / 92A96 input
Addr_Dat (Hex)	AD[31]	B20	A3:7
	AD[30]	A20	A3:6
	AD[29]	B21	A3:5
	AD[28]	A22	A3:4
	AD[27]	B23	A3:3
	AD[26]	A23	A3:2
	AD[25]	B24	A3:1
	AD[24]	A25	A3:0
	AD[23]	B27	A2:7
	AD[22]	A28	A2:6
	AD[21]	B29	A2:5
	AD[20]	A29	A2:4
	AD[19]	B30	A2:3
	AD[18]	A31	A2:2
	AD[17]	B32	A2:1
	AD[16]	A32	A2:0
	AD[15]	A44	A1:7
	AD[14]	B45	A1:6
	AD[13]	A46	A1:5
	AD[12]	B47	A1:4
	AD[11]	A47	A1:3
	AD[10]	B48	A1:2
	AD[9]	A49	A1:1
	AD[8]	B52	A1:0
	AD[7]	B53	A0:7
	AD[6]	A54	A0:6
	AD[5]	B55	A0:5
	AD[4]	A55	A0:4
	AD[3]	B56	A0:3
	AD[2]	A57	A0:2
	AD[1]	B58	A0:1
	AD[0]	A58	A0:0
Aux_0	Aux_0:[7-0]	-----	D2

Group Name	Signal Name	PCI Pin #	TLA600/700 / 92A96 input
Control (Sym)	RST#	A15	C3:5
	FRAME#	A34	C2:0
	DEVSEL#	B37	C3:0
	STOP#	A38	C2:3
	IRDY#	B35	C2:1
	TRDY#	A36	C2:2
	C/BE#[3]	B26	C2:7
	C/BE#[2]	B33	C2:6
	C/BE#[1]	B44	C2:5
	C/BE#[0]	A52	C2:4
Intrpt (Off)	INTD#	B08	C0:3
	INTC#	A07	C0:2
	INTB#	B07	C0:1
	INTA#	A06	C0:0
Misc (Off)	REQ#	B18	C0:5
	GNT#	A17	C0:6
	LOCK#	B39	C3:4
	IDSEL	A26	C0:4
	PERR#	B40	C3:3
	PAR	A43	C3:2
	SERR#	B42	C3:1
	CLK	B16	C3:7
Ungrouped	SDONE	A40	C3:6
	SBO#	A41	C1:3
	ACQ64#	B60	C1:1
	REQ64#	A60	C1:0
	M66EN	B49	C0:7
Aux_1	Aux_1:[7-0]	-----	D3
Clock:0	unused	-----	
Clock:1	DEVSEL#=	B37	
Clock:2	unused	-----	
Clock:3	CLK=	B16	

Table 1- NEX-PCI32EXHD 92A96/TLA600/700 (102/136-channel) Wiring

Group Name	Signal Name	PCI Pin #	TLA600/700 / 92A96 input	Group Name	Signal Name	PCI Pin #	TLA600/700 / 92A96 input
Addr_Dat (Hex)	AD[31]	B20	A3:7	Control (Sym)	RST#	A15	C3:5
	AD[30]	A20	A3:6		FRAME#	A34	C2:0
	AD[29]	B21	A3:5		DEVSEL#	B37	C3:0
	AD[28]	A22	A3:4		STOP#	A38	C2:3
	AD[27]	B23	A3:3		IRDY#	B35	C2:1
	AD[26]	A23	A3:2		TRDY#	A36	C2:2
	AD[25]	B24	A3:1		C/BE#[3]	B26	C2:7
	AD[24]	A25	A3:0		C/BE#[2]	B33	C2:6
	AD[23]	B27	A2:7		C/BE#[1]	B44	C2:5
	AD[22]	A28	A2:6		C/BE#[0]	A52	C2:4
	AD[21]	B29	A2:5	Intrpt (Off)	INTD#	B08	D0:3
	AD[20]	A29	A2:4		INTC#	A07	D0:2
	AD[19]	B30	A2:3		INTB#	B07	D0:1
	AD[18]	A31	A2:2		INTA#	A06	D0:0
	AD[17]	B32	A2:1	Misc (Off)	REQ#	B18	D0:5
	AD[16]	A32	A2:0		GNT#	A17	D0:6
	AD[15]	A44	A1:7		LOCK#	B39	C3:4
	AD[14]	B45	A1:6		IDSEL	A26	D0:4
	AD[13]	A46	A1:5		PERR#	B40	C3:3
	AD[12]	B47	A1:4		PAR	A43	C3:2
	AD[11]	A47	A1:3		SERR#	B42	C3:1
	AD[10]	B48	A1:2		CLK	B16	C3:7
	AD[9]	A49	A1:1	Ungrouped	SDONE	A40	C3:6
	AD[8]	B52	A1:0		SBO#	A41	D1:3
	AD[7]	B53	A0:7		ACQ64#	B60	D1:1
	AD[6]	A54	A0:6		REQ64#	A60	D1:0
	AD[5]	B55	A0:5		M66EN	B49	D0:7
	AD[4]	A55	A0:4				
	AD[3]	B56	A0:3	Clock:0	unused	-----	
	AD[2]	A57	A0:2	Clock:1	DEVSEL#=	B37	
	AD[1]	B58	A0:1	Clock:2	unused	-----	
	AD[0]	A58	A0:0	Clock:3	CLK=	B16	

Table 2- NEX-PCI32EXHD TLA600/700 (68-channel) Wiring

5.0 CLOCK SELECTION

5.1 General Information

There are three clocking options available when using the NEX-PCI32X support package. Each is explained in detail below.

When using a TLA600/700, the clocking mode is selected by moving to the System window, clicking on Setup for the appropriate LA card, then clicking on **More** (a button to the right of the Clocking field). Choose the desired mode in the Clocking Select field.

When using a DAS9200 or TLA500, the clocking selection is made in the Clock menu. Choose the desired mode in the Clocking Select field, then press <RETURN>.

5.2 Clocking Options - Explanation

Bus Cycle Acquisition - This is the default clocking selection. In this mode only one address cycle is expected. All Wait and Idle states are ignored. In this clocking mode the High Address cycle of a Dual Address cycle will ***not*** be acquired as it will be considered a Wait state. The Low Address portion of the cycle will be properly acquired and displayed, as will all data associated with the cycle. This clocking selection offers the best use of your acquisition memory by ignoring all Wait and Idle states. Data is acquired on the rising edge of CLK, with DEVSEL#, FRAME#, IRDY#, and TRDY# used as qualifiers to determine when valid information is present. These signals must be present for bus cycle acquisitions to be made properly.

Dual Address Capable - In this mode, both the Low Address and High Address parts of a Dual Address Cycle will be acquired. However, because of the clocking algorithm used, a Wait state immediately following a valid Address cycle will be acquired as well. The disassembly software will properly distinguish between a Wait cycle and the High Address portion of a Dual Address cycle, and will label each appropriately. As with Bus Cycle Acquisition, data is acquired on the rising edge of CLK, with DEVSEL#, FRAME#, IRDY#, and TRDY# used as qualifiers to determine when valid information is present. These signals must be present for this mode to properly acquire data.

Every CLK Rising Edge - In this mode, data will be acquired on every rising edge of the PCI CLK signal. The disassembly will filter and display these cycles accordingly, incorrect decoding may occur because of the numerous duplicated cycles. This clocking mode shows *all* bus cycles, including Wait and Idle states. Since no clocking qualification is done only the CLK signal is required.

6.0 VIEWING DATA

6.1 Viewing Timing Data on the TLA600/700

By default, the TLA600/700 will display an acquisition in the Disassembly mode. However, the same data can be displayed in Timing form by adding a Waveform Display window. This is done by clicking on the Window pull-down, selecting New Data Window, clicking on Waveform Window Type, then choosing the Data Source. Two choices are presented: PCI32X and PCI32X-MagniVu. The first will show the exact same data (same acquisition mode) as that shown in the Disassembly window, except in Timing format. The second selection, PCI32X-MagniVu, will show all of the channels in 2GHz MagniVu mode, so that edge relationships can be examined at the module's trigger point. With either selection, all channels can be viewed by scrolling down the window. Refer to the TLA600/700 System User's Manual for additional information on formatting the Waveform display.

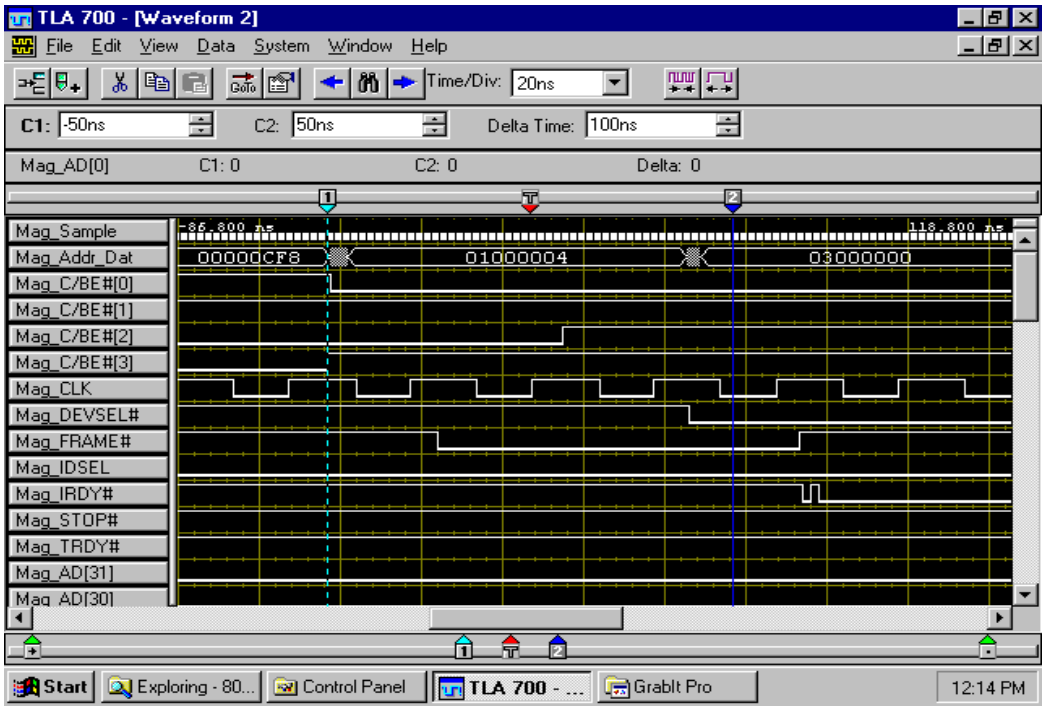


Figure 1- PCI32X MagniVu Display on TLA600/700

6.2 Viewing State Data on the DAS9200/TLA500

After an acquisition is made the DAS9200 Logic Analyzer will display the data in State Display mode (as a default only). Address / Data information is displayed in hexadecimal format; Control data is displayed using symbols; Interrupt, Miscellaneous, and both Auxiliary data groups default to OFF.

The use of Symbol Tables when displaying state data enables the user to quickly determine what type of bus cycle was acquired. A symbol table (PCI32X_Ctrl, Table 3) has been provided to show the type of transaction that occurred on the PCI bus. This symbol table quickly shows whether the acquisition was a memory or I/O operation, a read or a write, etc.

It is important to note that changing the group, channel, or wiring of the Control group can result in incorrect symbol information being displayed.

6.3 Viewing Timing Data on the DAS9200/TLA500

It may be useful to display acquired information using the Timing Diagram display of the DAS9200. (Note that, unlike some other logic analyzers, with the DAS9200 there is no need to re-acquire PCI data when changing from one display mode to another. The same data can be viewed in either format.) This method of data display can be particularly useful when an asynchronous acquisition has been made (using the DAS9200 internal acquisition clock) to determine the relationships between signal edges.

Refer to the appropriate Tektronix DAS 92A96 Module User's Manual for more detailed information on formatting the display of the acquired data.

Pattern	TLA600/700 / 92A96 Symbols	Meaning
0xxxxxxxxx	RESET	Reset
1011110000	INTERRUPT ACK	Interrupt Acknowledge
1011110001	SPECIAL CYCLE	Special Cycle
1011110010	I/O READ ADDRESS	I/O Read
1011110011	I/O WRITE ADDRESS	I/O Write
101111010x	RESERVED	Reserved
1011110110	MEMORY READ ADDRESS	Memory Read
1011110111	MEMORY WRITE ADDRESS	Memory Write
101111100x	RESERVED	Reserved
1011111010	CONFIG READ ADDRESS	Configuration Read
1011111011	CONFIG WRITE ADDRESS	Configuration Write
1011111100	MEMORY READ MULTIPLE	Memory Read Multiple
1011111101	DUAL ADDRESS	Dual Address Cycle
1011111110	MEMORY READ LINE	Memory Read Line
1011111111	MEMORY WRITE & INVALIDATE	Memory Write & Invalidate
111101xxxx	WAIT/MASTER ABORT	Wait or Master Abort
110101xxxx	TARGET ABORT	Target Abort
110001xxxx	RETRY	Retry Cycle
1x0x001110	DATA - BYTE 0	Byte 0 valid (D0-7)
1x0x001101	DATA - BYTE 1	Byte 1 valid (D8-15)
1x0x001011	DATA - BYTE 2	Byte 2 valid (D16-23)
1x0x000111	DATA - BYTE 3	Byte 3 valid (D24-31)
1x0x001100	DATA - BYTES 0 & 1	Bytes 0 & 1 valid (D0-15)
1x0x000011	DATA - BYTES 2 & 3	Bytes 2 & 3 valid (D16-31)
1x0x000000	DATA - BYTES 0-3	Bytes 0-3 valid (D0-31)
1x0x001111	INVALID DATA	Invalid Data
11xxxxxxxx	FRAME HI	Frame Hi
10xxxxxxxx	FRAME LO	Frame Lo

Table 3- NEX-PCI32EXHD Control Symbol Table

Signals, from left to right: RST#, FRAME#, STOP#, DEVSEL#, IRDY#, TRDY#, C/BE#[3], C/BE#[2], C/BE#[1], C/BE#[0]

7.0 USING the DISASSEMBLY SOFTWARE

7.1 General

The PCI32X support software decodes bus transactions and displays information in easily understood text form, just like a typical Tektronix microprocessor disassembler (see Figure 2). 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. 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. The C/BE bus signals are also monitored to determine which data bytes are valid for any given transaction. Invalid bytes are indicated by dashes in the display, making it much easier for the designer to determine what data is actually present on the bus at any given time.

It is also possible to filter the data display to show only those cycle types of interest (Figure 3). 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.

Another feature of the PCI32X 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 PCI32X 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. (See Section 5.2 Clocking Options for further information.)

Every stored cycle (bus or rising clock edge, depending upon clocking selection) has a timestamp value stored with it. This time information, accurate to 500ps in the TLA600/700 series, and to 10ns in the DAS9200 / TLA500, permits precise measurements of bus throughput during burst read transactions, etc. Because of the design of Tektronix Logic Analyzers there is no need to worry about trading off acquisition memory depth when making these measurements, as the timestamp memory is separate from the acquisition memory.

7.2 Disassembly Using the TLA600/700

The TLA600/700, since it is a Win95 program, has the same type of user interface as other Windows-based applications. In the Disassembly Listing window, a tool bar at the top of the window contains buttons that allow the user to modify the display. These buttons, from left to right, perform the following functions:

Add Column - Adds a column to the display

Add Mark - Adds a user mark to the display
Cut - (may be grayed out) - Cuts the selection to the Clipboard
Copy - (may be grayed out) - Copies the selection to the Clipboard
Paste - (may be grayed out) - Inserts the contents of the Clipboard
Go To - Moves the display to the item of interest
Properties - Edits the current Listing Display properties
Smaller Font - Decreases the displayed font size
Larger Font - Increases the displayed font size
Search Backward - Moves to a previous data match
Define Search - Define data to be matched
Search Forward - Moves to the next data match
Mark Opcode - Permits placing an opcode mark (disabled in PCI32SW)

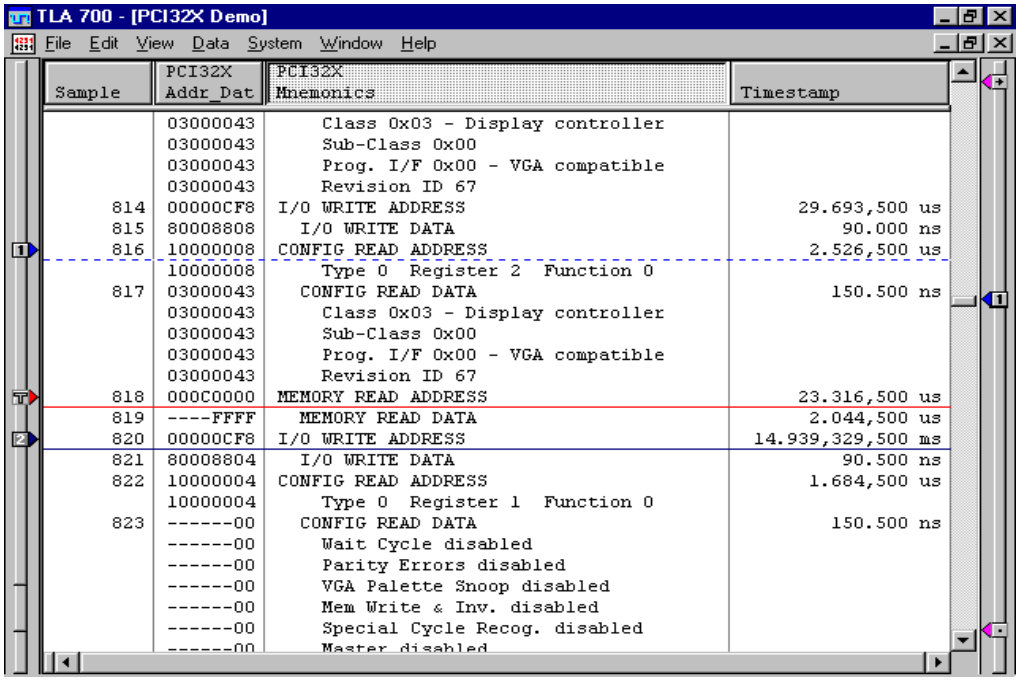


Figure 2- PCI32X Disassembly

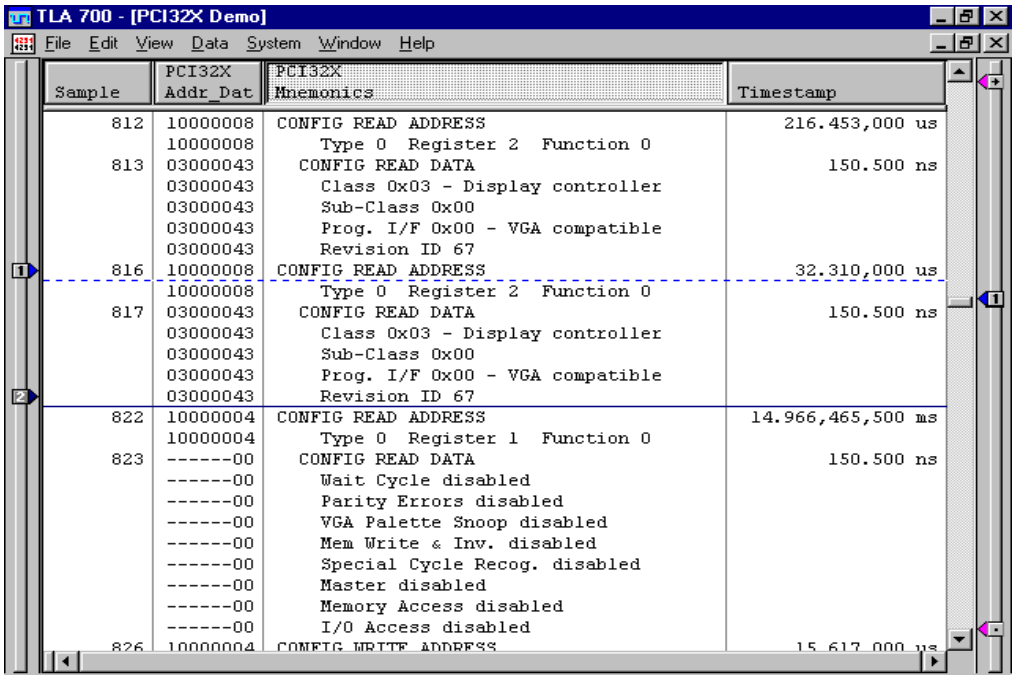


Figure 3- PCI32X Disassembly with suppressed Memory and I/O Cycles

The format (or display properties) of each displayed column can be changed by putting the mouse cursor on the heading of the column, clicking the left mouse button to select that column, clicking the right mouse button to bring up the editing dialog, then selecting Properties. The column to be modified can also be selected by clicking on the Column tab, selecting the column of interest in the Column field, then making any desired modifications to that display column. The modification or selections possible will vary from column to column.

Two display columns of particular interest are the Timestamp and Mnemonics columns. Timestamp shows a time value associated with the acquisition. By default, Timestamp shows the time from System Trigger. Clicking on the From window in the Timestamp Reference field shows all available selections: Absolute (from when the Logic Analyzer was started), Previous (the time from the present sequence to the previous displayed one), and three selections that permit time to be displayed from different reference points: System Trigger, Cursor 1 Current Position, and Cursor 2 Current Position. Selecting the desired mode with the mouse, and then clicking the left mouse button, will make the selection the present Timestamp display mode.

The other column of interest is the Mnemonics column, where the PCI32X disassembly information is displayed. As mentioned previously, it is possible to choose which PCI cycles are displayed. This is done via selections made in the Disassembly tab of the Properties window. By default the display is in Hardware mode, and Memory, I/O, and Config cycles are set to Highlight. By choosing something other than Hardware in the Show select field, any cycle type set to Normal (instead of Highlight) will not be displayed. It is possible, for instance, to display only Config Cycles by setting Memory and I/O Cycles to Normal, leaving Config Cycles set to

Highlight, and setting the Show select field to Software. All of the data still exists, some has just been suppressed from view. To return all of the data to visibility, set all Cycle selections to Highlight.

Note that when data is suppressed in this fashion that Timestamp information (in Previous form) will be updated to show the time between displayed cycles.

7.3 Disassembly Using the DAS9200 / TLA500

To view PCI32X data in Disassembly form, simply click on the DISASM button in the lower part of the DAS/TLA display, or select Disasm in the Display column of the Main Menu. All PCI transactions will be displayed and disassembled, and the Timestamp between each acquisition is displayed (Relative mode). To change the Timestamp format, press (or click) **F5** (Display Format) and open the Timestamp select field. The options available are: Relative (time from the previous sample), Delta (time from a user definable Delta mark), Absolute (time from when the acquisition card was started), and Off. Making a choice, closing the field, then pressing (or clicking) **F8** to Exit and Save will modify the Disassembly display appropriately.

To filter the displayed data, again move to the Display Format screen (press or click **F5**). The Hardware Display Mode (default) will display all PCI cycles by default.

By default the display is in Hardware mode, and Memory, I/O, and Config cycles are set to Highlight. By choosing something other than Hardware in the Display Mode select field, any cycle type set to Normal (instead of Highlight) will not be displayed. It is possible to display only Config Cycles by setting Memory and I/O Cycles to Normal, leaving Config Cycles set to Highlight, and setting the Display Mode select field to Software. All of the data still exists, some has just been suppressed from view. To return all of the data to visibility, set all Cycle selections to Highlight.

Note that when data is suppressed in this fashion that Timestamp information (in Relative form) will be updated to show the time between displayed cycles.

APPENDIX A - Necessary Signals for Clocking

To properly acquire PCI bus activity, the following signals must be provided: CLK, DEVSEL#, FRAME#, IRDY#, and TRDY#. The rising edge of CLK is used as the only active clocking edge; all other signals are used to properly qualify the acquisition of data.

APPENDIX B - Considerations

The NEX-PCI32EXHD is an extender card that is also designed to permit monitoring the PCI bus signals. This permits the user to see exactly what is happening at the target. It is important to note that using the card as an extender will violate the PCI specification for stub length. Every effort has been taken to keep trace length as short as possible. To enhance signal integrity, Schottky diode bus terminators have been added to each signal to reduce any signal reflections or voltage spikes. It is entirely possible, however, that placing a target card onto the NEX-PCI32EXHD extender will result in improper operation of the target card.

APPENDIX C - PCI Local Bus Pinout

Information given here is for the +5V and +3.3V PCI Board definitions:

Pin #	+5V Side B Component Side	+5V Side A Solder Side	+3.3V Side B Component Side	+3.3V Side A Solder Side	Comments
1	-12V	TRST#	-12V	TRST#	32-bit start
2	TCK	+12V	TCK	+12V	
3	Ground	TMS	Ground	TMS	
4	TDO	TDI	TDO	TDI	
5	+5V	+5V	+5V	+5V	
6	+5V	INTA#	+5V	INTA#	
7	INTB#	INTC#	INTB#	INTC#	
8	INTD#	+5V	INTD#	+5V	
9	PRSNT1#	Reserved	PRSNT1#	Reserved	
10	Reserved	+5V	Reserved	+3.3V	
11	PRSNT2#	Reserved	PRSNT2#	Reserved	
12	Ground	Ground	KEYWAY	KEYWAY	3.3V key
13	Ground	Ground	KEYWAY	KEYWAY	3.3V key
14	Reserved	Reserved	Reserved	Reserved	
15	Ground	RST#	Ground	RST#	
16	CLK	+5V	CLK	+3.3V	
17	Ground	GNT#	Ground	GNT#	
18	REQ#	Ground	REQ#	Ground	
19	+V I/O	Reserved	+V I/O	Reserved	
20	AD[31]	AD[30]	AD[31]	AD[30]	
21	AD[29]	+3.3V	AD[29]	+3.3V	
22	Ground	AD[28]	Ground	AD[28]	
23	AD[27]	AD[26]	AD[27]	AD[26]	
24	AD[25]	Ground	AD[25]	Ground	
25	+3.3V	AD[24]	+3.3V	AD[24]	
26	C/BE[3]#	IDSEL	C/BE[3]#	IDSEL	
27	AD[23]	+3.3V	AD[23]	+3.3V	
28	Ground	AD[22]	Ground	AD[22]	
29	AD[21]	AD[20]	AD[21]	AD[20]	
30	AD[19]	Ground	AD[19]	Ground	
31	+3.3V	AD[18]	+3.3V	AD[18]	
32	AD[17]	AD[16]	AD[17]	AD[16]	

Pin #	+5V Side B Component Side	+5V Side A Solder Side	+3.3V Side B Component Side	+3.3V Side A Solder Side	Comments
33	C/BE[2]#	+3.3V	C/BE[2]#	+3.3V	
34	Ground	FRAME#	Ground	FRAME#	
35	IRDY#	Ground	IRDY#	Ground	
36	+3.3V	TRDY#	+3.3V	TRDY#	
37	DEVSEL#	Ground	DEVSEL#	Ground	
38	Ground	STOP#	Ground	STOP#	
39	LOCK#	+3.3V	LOCK#	+3.3V	
40	PERR#	SDONE	PERR#	SDONE	
41	+3.3V	SBO#	+3.3V	SBO#	
42	SERR#	Ground	SERR#	Ground	
43	+3.3V	PAR	+3.3V	PAR	
44	C/BE[1]#	AD[15]	C/BE[1]#	AD[15]	
45	AD[14]	+3.3V	AD[14]	+3.3V	
46	Ground	AD[13]	Ground	AD[13]	
47	AD[12]	AD[11]	AD[12]	AD[11]	
48	AD[10]	Ground	AD[10]	Ground	
49	Ground	AD[9]	M66EN	AD[9]	
50	KEYWAY	KEYWAY	Ground	Ground	5V key
51	KEYWAY	KEYWAY	Ground	Ground	5V key
52	AD[8]	C/BE[0]#	AD[8]	C/BE[0]#	
53	AD[7]	+3.3V	AD[7]	+3.3V	
54	+3.3V	AD[6]	+3.3V	AD[6]	
55	AD[5]	AD[4]	AD[5]	AD[4]	
56	AD[3]	Ground	AD[3]	Ground	
57	Ground	AD[2]	Ground	AD[2]	
58	AD[1]	AD[0]	AD[1]	AD[0]	
59	+5V	+5V	+3.3V	+3.3V	
60	ACK64#	REQ64#	ACK64#	REQ64#	
61	+5V	+5V	+5V	+5V	
62	+5V	+5V	+5V	+5V	32-bit end

APPENDIX D - PCI32EXHD Mictor Pin Assignments

Assignments for the A-Group Mictor connector.

Tek Mictor Pin #	AMP Mictor Pin #	TLA600/700 Channel	PCI Signal Name	PCI Pin #	Tek Mictor Pin #	AMP Mictor Pin #	TLA600/700 Channel	PCI Signal Name	PCI Pin #
3	5	CLK:0	unused	- - - -	36	6	CLK:1[1]	DEVSEL#	
4	7	A3:7	AD[31]	B20	35	8	A1:7	AD[15]	A44
5	9	A3:6	AD[30]	A20	34	10	A1:6	AD[14]	B45
6	11	A3:5	AD[29]	B21	33	12	A1:5	AD[13]	A46
7	13	A3:4	AD[28]	A22	32	14	A1:4	AD[12]	B47
8	15	A3:3	AD[27]	B23	31	16	A1:3	AD[11]	A47
9	17	A3:2	AD[26]	A23	30	18	A1:2	AD[10]	B48
10	19	A3:1	AD[25]	B24	29	20	A1:1	AD[9]	A49
11	21	A3:0	AD[24]	A25	28	22	A1:0	AD[8]	B52
12	23	A2:7	AD[23]	B27	27	24	A0:7	AD[7]	B53
13	25	A2:6	AD[22]	A28	26	26	A0:6	AD[6]	A54
14	27	A2:5	AD[21]	B29	25	28	A0:5	AD[5]	B55
15	29	A2:4	AD[20]	A29	24	30	A0:4	AD[4]	A55
16	31	A2:3	AD[19]	B30	23	32	A0:3	AD[3]	B56
17	33	A2:2	AD[18]	A31	22	34	A0:2	AD[2]	A57
18	35	A2:1	AD[17]	B32	21	36	A0:1	AD[1]	B58
19	37	A2:0	AD[16]	A32	20	38	A0:0	AD[0]	A58

Notes:

1. DEVSEL# is also connected to C3:0.

PCI32EXHD Mictor Pin Assignments (cont.)

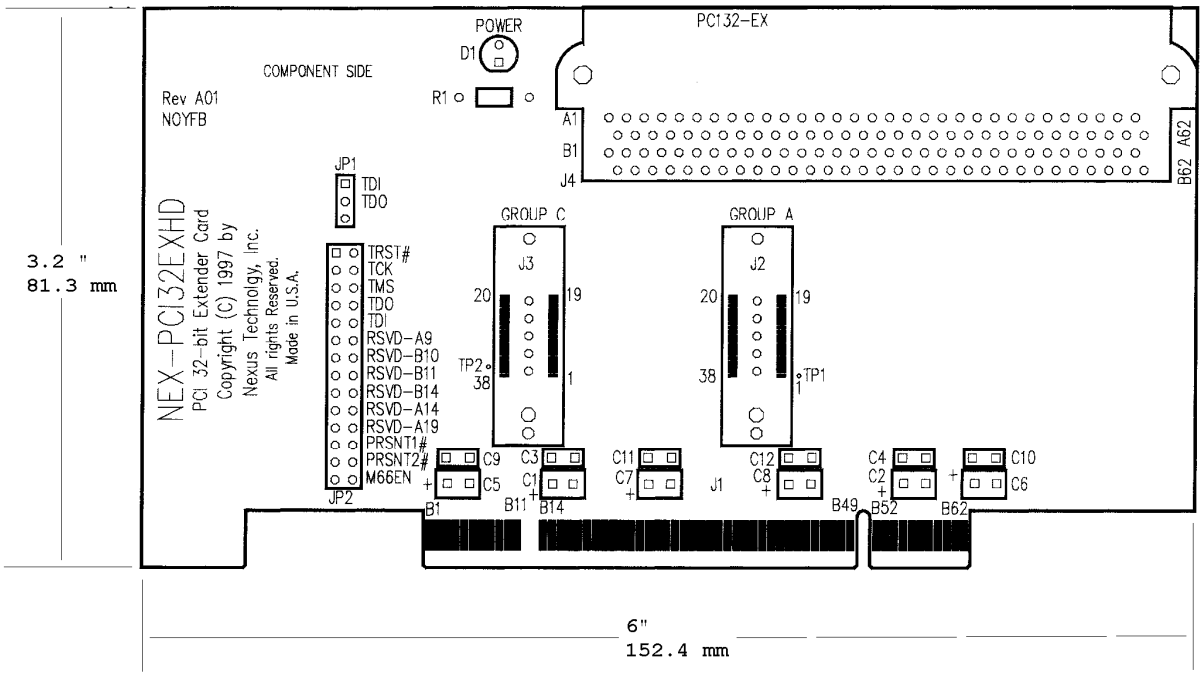
Assignments for the C-Group Mictor connector.

Tek Mictor Pin #	AMP Mictor Pin #	TLA600/ 700 Channel	PCI Signal Name	PCI Pin #	Tek Mictor Pin #	AMP Mictor Pin #	TLA600/ 700 Channel	PCI Signal Name	PCI Pin #
3	5	CLK:3[1]	CLK	B16	36	6	QUAL:1	unused	- - - -
4	7	C3:7	CLK	B16	35	8	C1:7	C/BE[3]#	B26
5	9	C3:6	SDONE	A40	34	10	C1:6	C/BE[2]#	B33
6	11	C3:5	RST#	A15	33	12	C1:5	C/BE[1]#	B44
7	13	C3:4	LOCK#	B39	32	14	C1:4	C/BE[0]#	A52
8	15	C3:3	PERR#	B40	31	16	C1:3	SBO#	A41
9	17	C3:2	PAR	A43	30	18	C1:2	unused	- - - -
10	19	C3:1	SERR#	B42	29	20	C1:1	ACQ64#	B60
11	21	C3:0	DEVSEL#	B37	28	22	C1:0	REQ64#	A60
12	23	C2:7[2]	C/BE[3]#	B26	27	24	C0:7	M66EN	B49
13	25	C2:6[2]	C/BE[2]#	B33	26	26	C0:6	GNT#	A17
14	27	C2:5[2]	C/BE[1]#	B44	25	28	C0:5	REQ#	B18
15	29	C2:4[2]	C/BE[0]#	A52	24	30	C0:4	IDSEL	A26
16	31	C2:3	STOP#	A38	23	32	C0:3	INTD#	B08
17	33	C2:2	TRDY#	A36	22	34	C0:2	INTC#	A07
18	35	C2:1	IRDY#	B35	21	36	C0:1	INTB#	B07
19	37	C2:0	FRAME#	A34	20	38	C0:0	INTA#	A06

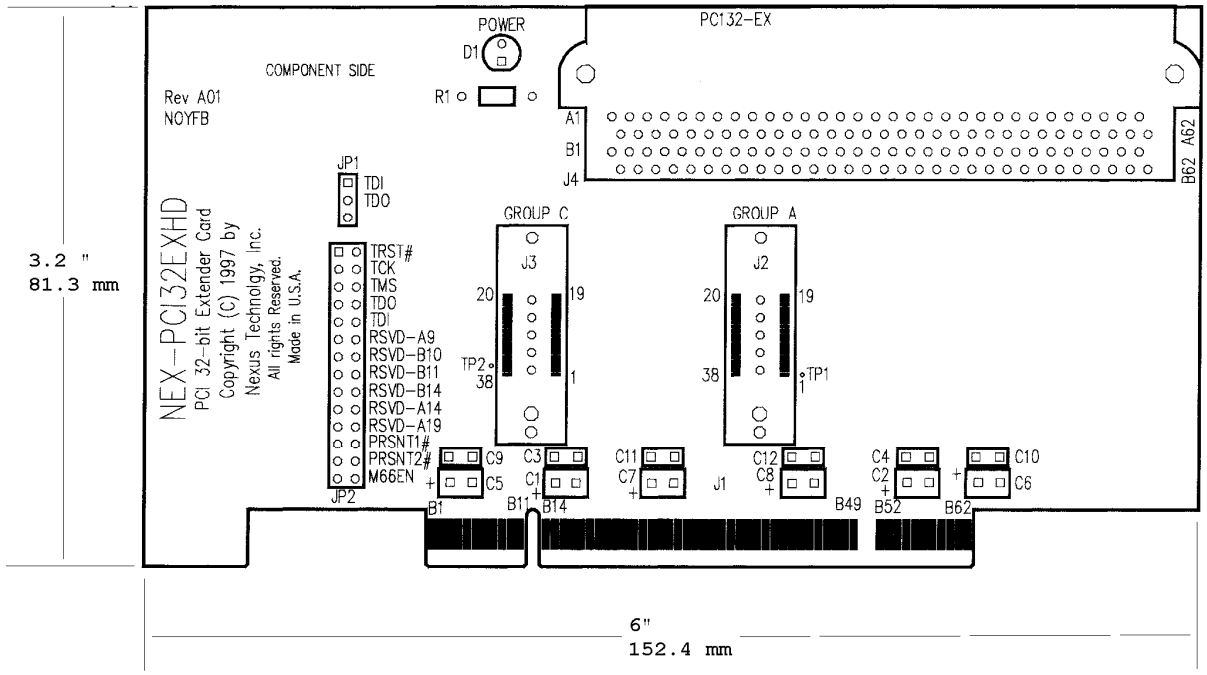
Notes:

1. CLK is also connected to C3:7.
2. C/BE[3-0]# are also connected to C1:7-4.

APPENDIX E - NEX-PCI32EXHD Silk Screen



NEX-PCI32EXHD5 (5 volt version)



NEX-PCI32EXHD3 (3 volt version)

APPENDIX F - Support

About Nexus Technology, Inc.

Established in 1991, Nexus Technology, Inc. is dedicated to developing, marketing, and supporting Bus Analysis applications for Tektronix Logic Analyzers.

We can be reached at:

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Web site: http://**www.nexustechnology.com**

Support Contact Information

Technical Support	**techsupport@nexustechnology.com**
General Information	**support@nexustechnology.com**
Quote Requests	**quotes@nexustechnology.com**

We will try to respond within one business day.

If Problems Are Found

Document the problem and e-mail the information to us. If at all possible please forward a Saved System Setup (with acquired data) that shows the problem. Do not send a text listing alone as that does not contain enough data for analysis. To prevent corruption during the mailing process it is strongly suggested that the Setup be zipped before transmission.

APPENDIX G - References

Tektronix TLA700 System User's Manual

Tektronix TLA700 Module User's Manual

Tektronix P6434 Mass Termination Probe Instruction Manual

Tektronix DAS9200 / TLA500 System User's Manual

Tektronix 92A96 / 92C96 Module User's Manual

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503-797-4207 (International)
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