



NEX-CPCI-A

CompactPCI Bus Adapter Users Manual

Including these Software Support packages:
CPCI32A CPCI64A

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1.0 OVERVIEW

1.1 General Information

The NEX-CPCI-A adapter has been designed to provide quick and easy connections to interface a 102 or 136-channel TLA600/700 acquisition module to a CompactPCI backplane. (The PCI designation refers to the Peripheral Component Interconnect Local Bus specification.) Connections are made through P6434 probes when using a TLA600/700. The P6434 probes are available from Tektronix.

The included NEX-CPCI32A software permits the acquisition of all 32-bit CompactPCI bus cycles, ignoring all Wait and Idle cycles (although it is possible to acquire these cycles if desired). The NEX-CPCI64A supports acquisition of 64-bit CPCI. 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 the TLA700 apply to a TLA600 or 700 with a 102 or 136-channel acquisition card.

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

This manual assumes that the user is familiar with the CompactPCI Local Bus specification and the Tektronix TLA600/700 Logic Analyzer. It is also expected that the user is familiar with Windows 95, 98 or 2000 depending on the operating system of the Logic Analyzer.

2.0 SOFTWARE INSTALLATION

Two 3½” diskettes have been included with the NEX-CPCI-A Bus Adapter. One is for 32-bit CPCI support and the other is for 64-bit CPCI support.

2.1 TLA600/700

The NEX-CPCI32A software is loaded in the same method as other Windows programs. Place the NEX-CPCI32A Install disk in the floppy drive of the TLA700. 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 CPCI32A support in its proper place on the hard disk.

To load CPCI32A support into the TLA700, first select the desired Logic Analyzer card in the Setup screen, select Load Support Package from the File pull-down, then choose CPCI32A and click on **Okay**.

CPCI64A software is loaded the same way.

3.0 CONFIGURING the NEX-CPCI-A BUS ADAPTER

3.1 General Information

The NEX-CPCI-A is compliant with the PICMG 2.1 R2.0 Compact PCI Specification. The NEX-CPCI-A supports 32 and 64-bit peripheral slots. Please call for information on system slot support, if needed. Not all CompactPCI signals are monitored by the TLA700. (Refer to Table 1 for a list of acquired signals.) Some of the remaining signals have been brought to headers so that they can be monitored if desired. One set (JP2) brings out the bus voltages; another (JP1) brings out the JTAG signals.

3.2 Pad Area

The E-Mictor is unused for standard CPCI acquisition. However, there is an E-Mictor on the adapter that has its pins routed to a “Mictor E” pad area on the top left of the NEX-CPCI-A adapter. There is another pad area directly beneath the “E Mictor” pad area. This has CPCI signals routed to it that are not connected to the A, C or D mictor connectors on the adapter. If there is a need to monitor any of these CPCI signals with the logic analyzer the user can add a wire connecting the selected CPCI signal to an E-Mictor pin. The following is a list of the CPCI signals that are routed to the pad area:

J1: B17-IPMB SCL, C17-IPMB SDA, D15-BD SEL#

J2: A1-RSV, A2-RSV, A3-RSV, A15-BRSVP2A15, A16-BRSVP2A16, A17-BRSVP2A17, A18-BRSVP2A18, A19-RSV, A20-RSV, A21-RSV, A22-GA4, B2-RSV, B4-BRSVP2B4, B16-BRSVP2B16, B18-BRSVP2B18, B19-RSV, B20-RSV, B21-RSV, B22-GA3, C1-RSV, C3-RSV, C15-RSV, C16-RSV, C17-RSV, C18-BRSVP2C18, C19-RSV, C20-RSV, C21-RSV, C22-GA2, D1-RSV, D2-RSV, D3-RSV, D15-RSV, D17-RSV, D19-RSV, D21-

RSV, D22-GA1, E1-RSV, E2-RSV, E3-RSV, E15-RSV, E16-BRSVP2E16, E17-RSV, E18-BRSVP2E18, E19-RSV, E20-RSV, E21-RSV, E22-GA0

4.0 CONNECTING to the NEX-CPCI-A ADAPTER

4.1 General

The NEX-CPCI-A is an extender card that is also designed to permit monitoring the CompactPCI 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 CompactPCI specification for stub length. Every effort has been taken to keep trace length as short as possible. It is entirely possible, however, that placing a target card onto the NEX-CPCI-A extender will result in improper operation of the target card.

4.2 TLA600/700

When using a TLA700 with the NEX-CPCI-A 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 TLA7*3/4 102/136-channel acquisition module for 32-bit CompactPCI support, the necessary acquisition data sections are A0-A3, C0-C3, and D0-D3. One P6434 plugs onto the Group A connector on the NEX-CPCI 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 NEX-CPCI and then connects to the Gray (C0 and C1) and White (C2 and C3) locations on the acquisition card. The third P6434 plugs onto the Group E connector on the adapter and then connects to the Yellow (D0 and D1) and Blue (D2 and D3) locations on the acquisition card. Table 1 shows the wiring and Channel Grouping for the 102/136-channel TLA700 NEX-CPCI-A connection.

| Group Name | Signal Name | CPCI Pin # | TLA700 input |
|-------------------|--------------------|-------------------|---------------------|
| Addr_Dat (Hex) | AD[63] | J2A6 | D3:7 |
| | AD[62] | J2B6 | D3:6 |
| | AD[61] | J2C6 | D3:5 |
| | AD[60] | J2E6 | D3:4 |
| | AD[59] | J2A7 | D3:3 |
| | AD[58] | J2D7 | D3:2 |
| | AD[57] | J2E8 | D3:1 |
| | AD[56] | J2A8 | D3:0 |
| | AD[55] | J2B8 | D2:7 |
| | AD[54] | J2C8 | D2:6 |
| | AD[53] | J2E8 | D2:5 |
| | AD[52] | J2A9 | D2:4 |
| | AD[51] | J2D9 | D2:3 |
| | AD[50] | J2E9 | D2:2 |
| | AD[49] | J2A10 | D2:1 |
| | AD[48] | J2B10 | D2:0 |
| | AD[47] | J2C10 | D1:7 |
| | AD[46] | J2E10 | D1:6 |
| | AD[45] | J2A11 | D1:5 |
| | AD[44] | J2D11 | D1:4 |
| | AD[43] | J2E11 | D1:3 |
| | AD[42] | J2A12 | D1:2 |
| | AD[41] | J2B12 | D1:1 |
| | AD[40] | J2C12 | D1:0 |
| | AD[39] | J2E12 | D0:7 |
| | AD[38] | J2A13 | D0:6 |
| | AD[37] | J2D13 | D0:5 |
| | AD[36] | J2E13 | D0:4 |
| | AD[35] | J2A14 | D0:3 |
| | AD[34] | J2B14 | D0:2 |
| | AD[33] | J2C14 | D0:1 |
| | AD[32] | J2E14 | D0:0 |

Table 1- NEX-CPCI-A TLA600/700 Wiring

| Group Name | Signal Name | CPCI Pin # | TLA700 input | Group Name | Signal Name | CPCI Pin # | TLA700 input |
|-------------------|-------------|------------|--------------|------------------|-----------------|------------|--------------|
| Addr_Dat (Hex) | AD[31] | J1E6 | A3:7 | Control (Sym) | RST# | J1C5 | C0:7 |
| | AD[30] | J1A7 | A3:6 | | FRAME# | J1B15 | C2:0 |
| | AD[29] | J1B7 | A3:5 | | STOP# | J1D16 | C2:3 |
| | AD[28] | J1C7 | A3:4 | | IRDY# | J1C15 | C2:1 |
| | AD[27] | J1E7 | A3:3 | | TRDY# | J1E15 | C2:2 |
| | AD[26] | J1A8 | A3:2 | | C/BE[3]# | J1A9 | C2:7 |
| | AD[25] | J1D8 | A3:1 | | C/BE[2]# | J1E11 | C2:6 |
| | AD[24] | J1E8 | A3:0 | | C/BE[1]# | J1E18 | C2:5 |
| | AD[23] | J1C9 | A2:7 | | C/BE[0]# | J1E21 | C2:4 |
| | AD[22] | J1E9 | A2:6 | | Intrpt (Off) | INTD# | J1E3 |
| | AD[21] | J1A10 | A2:5 | INTC# | | J1C3 | C3:2 |
| | AD[20] | J1D10 | A2:4 | INTB# | | J1B3 | C3:1 |
| | AD[19] | J1E10 | A2:3 | | INTA# | J1A3 | C3:0 |
| | AD[18] | J1A11 | A2:2 | Misc (Off) | INTS | J1E4 | C3:7 |
| | AD[17] | J1B11 | A2:1 | | INTP | J1D4 | QUAL1 |
| | AD[16] | J1C11 | A2:0 | | REQ# | J1A6 | C3:4 |
| | AD[15] | J1B19 | A1:7 | | GNT# | J1E5 | C3:5 |
| | AD[14] | J1C19 | A1:6 | | LOCK# | J1E16 | C1:6 |
| | AD[13] | J1E19 | A1:5 | | IDSEL | J1B9 | C1:2 |
| | AD[12] | J1A20 | A1:4 | | PERR# | J1E17 | C1:7 |
| | AD[11] | J1D20 | A1:3 | | PAR | J1D18 | C0:6 |
| | AD[10] | J1E20 | A1:2 | | SERR# | J1A18 | C3:6 |
| | AD[9] | J1B21 | A1:1 | | HEALTHY | J1B4 | QUAL0 |
| | AD[8] | J1C21 | A1:0 | | 66EN# | J2B5 | C1:5 |
| AD[7] | J1A22 | A0:7 | | PCIXCAP | J1B16 | C1:4 | |
| AD[6] | J1D22 | A0:6 | | PAR64 | J2E5 | C1:3 | |
| AD[5] | J1E22 | A0:5 | | C/BE[7]# | J2C4 | C0:5 | |
| AD[4] | J1B23 | A0:4 | | C/BE/[6]# | J2E4 | C0:4 | |
| AD[3] | J1C23 | A0:3 | | ACQ64 | J1E24 | C0:3 | |
| AD[2] | J1E23 | A0:2 | | REQ64 | J1B25 | C0:2 | |
| AD[1] | J1A24 | A0:1 | | C/BE[5]# | J2A5 | C0:1 | |
| AD[0] | J1D24 | A0:0 | | C/BE[4]# | J2D5 | C0:0 | |
| Clock:0 | DEVSEL# | J1A16 | | | | | |
| Clock:1 | M66EN | J1D21 | | | | | |
| Clock:2 | ENUM | J1C25 | | | | | |
| Clock:3 | CLK | J1D6 | | | | | |

Table 1 (cont.) - NEX-CPCI-A TLA600/700 Wiring

5.0 CLOCK SELECTION

5.1 General Information

There are three clocking options available when using the NEX-CPCI32A support package. Each is explained in detail below.

When using a TLA700, 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.

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 TLA700 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: CPCI32A and CPCI32A-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, CPCI32A-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 TLA700 System User's Manual for additional information on formatting the Waveform display.

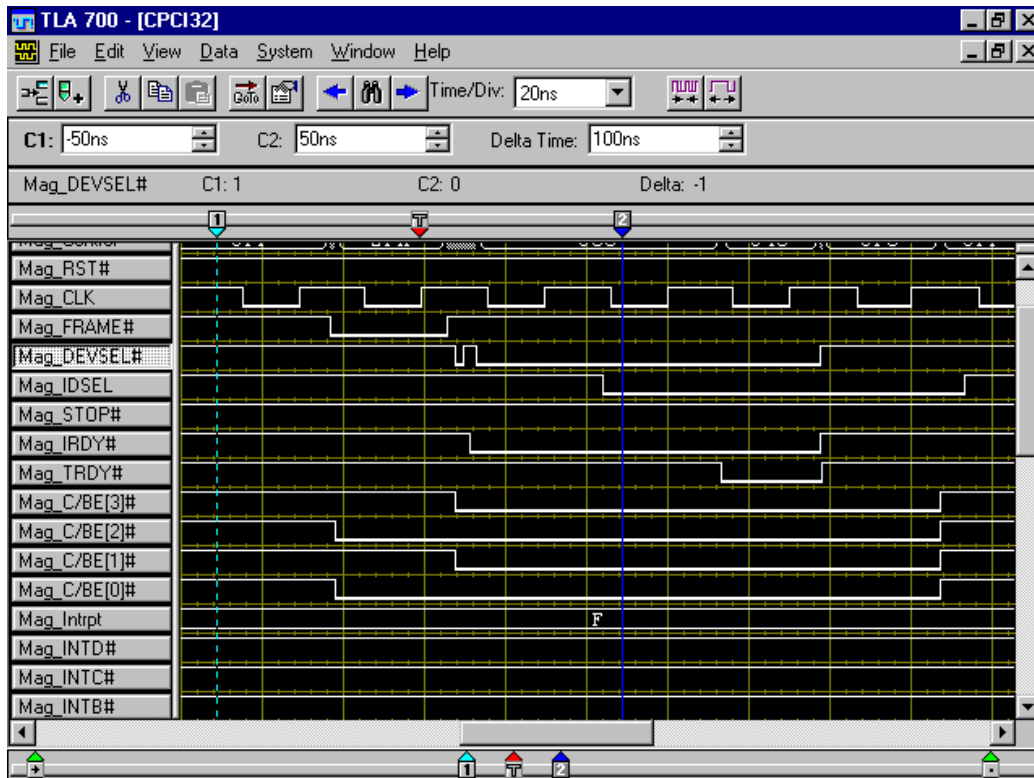


Figure 1- CPCI32A MagniVu Display on TLA600/700

| Pattern | Symbol | Meaning |
|----------------|---------------------------|---------------------------|
| 10 1111 1111 | MEMORY_WRITE_&_INVALIDATE | Memory Write & Invalidate |
| 0x xxxx xxxx | RESET | Reset |
| 10 1111 0000 | INTERRUPT_ACK | Interrupt Acknowledge |
| 10 1111 0001 | SPECIAL_CYCLE | Special Cycle |
| 10 1111 0010 | I/O_READ | I/O Read |
| 10 1111 0011 | I/O_WRITE | I/O Write |
| 10 1111 010x | RESERVED | Reserved |
| 10 1111 0110 | MEMORY_READ_ADDRESS | Memory Read |
| 10 1111 0111 | MEMORY_WRITE_ADDRESS | Memory Write |
| 10 1111 100x | RESERVED | Reserved |
| 10 1111 1010 | CONFIG_READ_ADDRESS | Configuration Read |
| 10 1111 1011 | CONFIG_WRITE_ADDRESS | Configuration Write |
| 10 1111 1100 | MEMORY_READ_MULTIPLE | Memory Read Multiple |
| 10 1111 1101 | DUAL_ADDRESS | Dual Address Cycle |
| 10 1111 1110 | MEMORY_READ_LINE | Memory Read Line |
| 1x 0x00 1110 | DATA-BYTE_0 | Data Byte 0 |
| 1x 0x00 1101 | DATA-BYTE_1 | Data Byte 1 |
| 1x 0x00 1011 | DATA-BYTE_2 | Data Byte 2 |
| 1x 0x00 0111 | DATA-BYTE_3 | Data Byte 3 |
| 1x 0x00 1100 | DATA-BYTE_0&1 | Data Byte 0&1 |
| 1x 0x00 0011 | DATA-BYTE_2&3 | Data Byte 2&3 |
| 1x 0x00 0000 | DATA-BYTE_0-3 | Data Byte 0-3 |
| 10 0x00 1111 | ZERO_BYTE_OPERATION | Zero Byte Operation |
| 11 0x00 1111 | INVALID_DATA | Invalid Data |
| 11 xxxx xxxx | FRAME_HI | Frame Low |
| 10 xxxx xxxx | FRAME_LO | Frame Hi |
| xx xxxx xxxx | UNDEFINED | Undefined |

Table 2- CPCI-A 32-bit Ctrl 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]#

| Pattern | Symbol |
|---------------------|---------------------|
| 0 xx xxxxx xxxxxxxx | RESET |
| 1 xx 01111 xxxx0000 | INTERRUPT ACK |
| 1 xx 01111 xxxx0001 | SPECIAL CYCLE |
| 1 xx 01111 xxxx0010 | I/O READ |
| 1 xx 01111 xxxx0011 | I/O WRITE |
| 1 xx 01111 xxxx010x | RESERVED |
| 1 xx 01111 xxxx0110 | MEMORY READ |
| 1 xx 01111 xxxx0111 | MEMORY WRITE |
| 1 xx 01111 xxxx100x | RESERVED |
| 1 xx 01111 xxxx1010 | CONFIG READ |
| 1 xx 01111 xxxx1011 | CONFIG WRITE |
| 1 xx 01111 xxxx1100 | MEM READ MULT |
| 1 xx 01111 xxxx1101 | DUAL ADDR |
| 1 xx 01111 xxxx1110 | MEM READ LINE |
| 1 xx 01111 xxxx1111 | MEM WRT & INV |
| 1 x1 x0x00 11111110 | BYTE 0 |
| 1 x1 x0x00 11111101 | BYTE 1 |
| 1 x1 x0x00 11111011 | BYTE 2 |
| 1 x1 x0x00 11110111 | BYTE 3 |
| 1 x1 x0x00 11101111 | BYTE 4 |
| 1 x1 x0x00 11011111 | BYTE 5 |
| 1 x1 x0x00 10111111 | BYTE 6 |
| 1 x1 x0x00 01111111 | BYTE 7 |
| 1 x1 x0x00 11111100 | BYTES 0 , 1 |
| 1 x1 x0x00 11110011 | BYTES 2 , 3 |
| 1 x1 x0x00 11001111 | BYTES 4 , 5 |
| 1 x1 x0x00 00111111 | BYTES 6 , 7 |
| 1 x1 x0x00 11110000 | BYTES 0 – 3 |
| 1 x1 x0x00 00001111 | BYTES 4 – 7 |
| 1 x0 x0x00 00000000 | BYTES 0 – 7 |
| 1 11 x0x00 xxxx0000 | LOW 32-BITS |
| 1 xx x0x00 11111111 | INVALID DATA |
| 1 xx 11101 xxxxxxxx | WAIT/MASTER ABORT |
| 1 xx 11001 xxxxxxxx | TARGET ABORT |
| 1 xx 10001 xxxxxxxx | RETRY |
| 1 xx 1xxxx xxxxxxxx | FRAME HI |
| 1 xx 0xxxx xxxxxxxx | FRAME LO |
| 1 xx 00x00 11111111 | ZERO BYTE OPERATION |

Table 3- CPCI-A 64-bit Control Symbol Table

7.0 USING the DISASSEMBLY SOFTWARE

7.1 General

The CPCI32A support software decodes bus transactions and displays information in easily understood text form, just like a typical Tektronix microprocessor disassembler (see Figure 2). All CompactPCI 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 CPCI32A 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 CPCI32A software is able to acquire only the CompactPCI 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 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 TLA700 series, 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 TLA700, since it is a Windows 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

TLA 700 - [CPCI32]

File Edit View Data System Window Help

C1: CPCI32 839 C2: CPCI32 1025 Delta Time: 192.992us

| Sample | CPCI32 Addr_Dat | CPCI32 Mnemonics | Timestamp |
|--------|-----------------|-------------------------------|--------------|
| 829 | 000F958C | MEMORY READ ADDRESS | 90.500 ns |
| 830 | 66117580 | MEMORY READ DATA | 3.963,500 us |
| 831 | 00010048 | CONFIG WRITE ADDRESS | 121.000 ns |
| | 00010048 | Type 0 Register 18 Function 0 | |
| 832 | --07---- | CONFIG WRITE DATA | 91.000 ns |
| | --07---- | Device-specific Config Write | |
| 833 | 00000080 | I/O WRITE ADDRESS | 3.631,000 us |
| 834 | -----51 | I/O WRITE DATA | 1.180,000 us |
| 835 | 000004D0 | I/O WRITE ADDRESS | 1.997,000 us |
| 836 | ----1E00 | I/O WRITE DATA | 2.058,000 us |
| 837 | 00000080 | I/O WRITE ADDRESS | 393.500 ns |
| 838 | -----55 | I/O WRITE DATA | 1.149,500 ns |
| 839 | 00010000 | CONFIG READ ADDRESS | 1.997,500 us |
| | 00010000 | Type 0 Register 0 Function 0 | |
| 840 | 146110B9 | CONFIG READ DATA | 90.500 ns |
| | 146110B9 | Device ID 5217 Vendor ID 4281 | |
| 841 | 00010008 | CONFIG READ ADDRESS | 1.210,000 us |
| | 00010008 | Type 0 Register 2 Function 0 | |
| 842 | 06000031 | CONFIG READ DATA | 90.500 ns |
| | 06000031 | Class 0x06 - Bridge device | |
| | 06000031 | Sub-Class 0x00 | |
| | 06000031 | Prog. I/F 0x00 - Host/PCI | |
| | 06000031 | Revision ID 49 | |

Figure 2- CPCI32A Disassembly

TLA 700 - [CPCI32]

File Edit View Data System Window Help

C1: CPCI32 839 C2: CPCI32 1025 Delta Time: 192.992us

| Sample | CPCI32 Addr_Dat | CPCI32 Mnemonics | Timestamp |
|--------|-----------------|-------------------------------|----------------|
| 0 | DA8E---- | VALID DATA ? | 0 ps |
| 673 | 00010048 | CONFIG READ ADDRESS | 830.520,000 us |
| | 00010048 | Type 0 Register 18 Function 0 | |
| 674 | --05---- | CONFIG READ DATA | 90.500 ns |
| | --05---- | Device-specific Config Read | |
| 831 | 00010048 | CONFIG WRITE ADDRESS | 313.726,000 us |
| | 00010048 | Type 0 Register 18 Function 0 | |
| 832 | --07---- | CONFIG WRITE DATA | 91.000 ns |
| | --07---- | Device-specific Config Write | |
| 839 | 00010000 | CONFIG READ ADDRESS | 12.406,500 us |
| | 00010000 | Type 0 Register 0 Function 0 | |
| 840 | 146110B9 | CONFIG READ DATA | 90.500 ns |
| | 146110B9 | Device ID 5217 Vendor ID 4281 | |
| 841 | 00010008 | CONFIG READ ADDRESS | 1.210,000 us |
| | 00010008 | Type 0 Register 2 Function 0 | |
| 842 | 06000031 | CONFIG READ DATA | 90.500 ns |
| | 06000031 | Class 0x06 - Bridge device | |
| | 06000031 | Sub-Class 0x00 | |
| | 06000031 | Prog. I/F 0x00 - Host/PCI | |
| | 06000031 | Revision ID 49 | |
| 843 | 0001000C | CONFIG READ ADDRESS | 3.782,500 us |
| | 0001000C | Type 0 Register 2 Function 0 | |

Figure 3- CPCI32A Disassembly with suppressed Memory and I/O Cycles

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)

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 CPCI32A disassembly information is displayed. As mentioned previously, it is possible to choose which CompactPCI 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.

APPENDIX A - Necessary Signals for Clocking

To properly acquire CompactPCI 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.

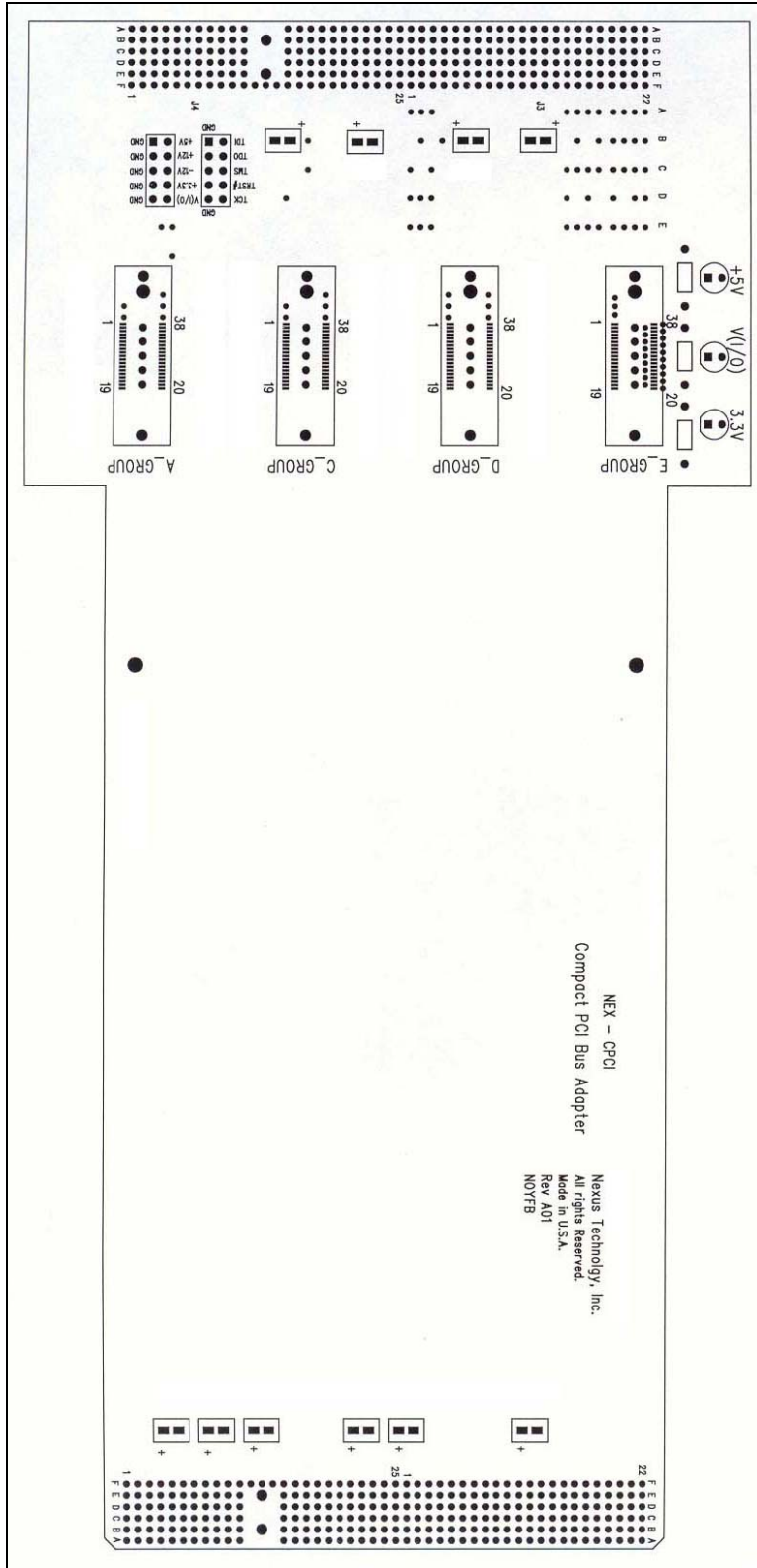
APPENDIX B - Considerations

The NEX-CPCI-A is an extender card that is also designed to permit monitoring the CompactPCI 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 CompactPCI specification for stub length. Every effort has been taken to keep trace length as short as possible. It is entirely possible, however, that placing a target card onto the NEX-CPCI-A extender will result in improper operation of the target card.

APPENDIX C - CompactPCI Bus Pinout

| Pin # | Z | A | B | C | D | E | F |
|-------|-----|-----------|-----------|-----------|----------|-----------|-----|
| 22 | GND | GA4 | GA3 | GA2 | GA1 | GA0 | GND |
| 21 | GND | RSV | RSV | RSV | RSV | RSV | GND |
| 20 | GND | RSV | RSV | RSV | GND | RSV | GND |
| 19 | GND | RSV | RSV | RSV | RSV | RSV | GND |
| 18 | GND | BRSVP2A18 | BRSVP2B18 | BRSVP2C18 | GND | BRSVP2E18 | GND |
| 17 | GND | BRSVP2A17 | GND | RSV | RSV | RSV | GND |
| 16 | GND | BRSVP2A16 | BRSVP2B16 | RSV | GND | BRSVP2E16 | GND |
| 15 | GND | BRSVP2A15 | GND | RSV | RSV | RSV | GND |
| 14 | GND | AD[35] | AD[34] | AD[33] | GND | AD[32] | GND |
| 13 | GND | AD[38] | GND | V(I/O) | AD[37] | AD[36] | GND |
| 12 | GND | AD[42] | AD[41] | AD[40] | GND | AD[39] | GND |
| 11 | GND | AD[45] | GND | V(I/O) | AD[44] | AD[43] | GND |
| 10 | GND | AD[49] | AD[48] | AD[47] | GND | AD[46] | GND |
| 9 | GND | AD[52] | GND | V(I/O) | AD[51] | AD[50] | GND |
| 8 | GND | AD[56] | AD[55] | AD[54] | GND | AD[53] | GND |
| 7 | GND | AD[59] | GND | V(I/O) | AD[58] | AD[57] | GND |
| 6 | GND | AD[63] | AD[62] | AD[61] | GND | AD[60] | GND |
| 5 | GND | C/BE[5]# | 64EN# | V(I/O) | C/BE[4]# | PAR64 | GND |
| 4 | GND | V(I/O) | BRSVP2B4 | C/BE[7]# | GND | C/BE[6]# | GND |
| 3 | GND | RSV | GND | RSV | RSV | RSV | GND |
| 2 | GND | RSV | RSV | UNC | RSV | RSV | GND |
| 1 | GND | RSV | GND | RSV | RSV | RSV | GND |
| 25 | GND | 5V | REQ64# | ENUM# | 3.3V | 5V | GND |
| 24 | GND | AD[1] | 5V | V(I/O) | AD[0] | ACK64# | GND |
| 23 | GND | 3.3V | AD[4] | AD[3] | 5V | AD[2] | GND |
| 22 | GND | AD[7] | GND | 3.3V | AD[6] | AD[5] | GND |
| 21 | GND | 3.3V | AD[9] | AD[8] | M66EN | C/BE[0]# | GND |
| 20 | GND | AD[12] | GND | V(I/O) | AD[11] | AD[10] | GND |
| 19 | GND | 3.3V | AD[15] | AD[14] | GND | AD[13] | GND |
| 18 | GND | SERR# | GND | 3.3V | PAR | C/BE[1]# | GND |
| 17 | GND | 3.3V | IPMB SCL | IPMB SDA | GND | PERR# | GND |
| 16 | GND | DEVSEL# | PCIXCAP | V(I/O) | STOP# | LOCK# | GND |
| 15 | GND | 3.3V | FRAME# | IRDY# | BD SEL# | TRDY# | GND |
| 14 | | | | | | | |
| 13 | | | K E Y | | A R E A | | |
| 12 | | | | | | | |
| 11 | GND | AD[18] | AD[17] | AD[16] | GND | C/BE[2]# | GND |
| 10 | GND | AD[21] | GND | 3.3V | AD[20] | AD[19] | GND |
| 9 | GND | C/BE[3]# | IDSEL | AD[23] | GND | AD[22] | GND |
| 8 | GND | AD[26] | GND | V(I/O) | AD[25] | AD[24] | GND |
| 7 | GND | AD[30] | AD[29] | AD[28] | GND | AD[27] | GND |
| 6 | GND | REQ# | GND | 3.3V | CLK | AD[31] | GND |
| 5 | GND | BRSVP1A5 | BRSVP1B5 | RST# | GND | GNT# | GND |
| 4 | GND | IPMB PWR | HEALTHY# | V(I/O) | INTP | INTS | GND |
| 3 | GND | INTA# | INTB# | INTC# | 5V | INTD# | GND |
| 2 | GND | TCK | 5V | TMS | TDO | TDI | GND |
| 1 | GND | 5V | -12V | TRST# | +12V | 5V | GND |

APPENDIX D - NEX-CPCI-A Silk Screen



APPENDIX E - Mictor Pinout

| Mictor Pin Number | TLA700 Channel | CPCI Signal Name | CPCI Pin # | Mictor Pin Number | TLA700 Channel | CPCI Signal Name | CPCI Pin # |
|-------------------|----------------|------------------|------------|-------------------|----------------|------------------|------------|
| 3 | CLK:0 | DEVSEL# | J1A16 | 36 | CLK:1 | M66EN | J1D21 |
| 4 | A3:7 | AD[31] | J1E6 | 35 | A1:7 | AD[15] | J1B19 |
| 5 | A3:6 | AD[30] | J1A7 | 34 | A1:6 | AD[14] | J1C19 |
| 6 | A3:5 | AD[29] | J1B7 | 33 | A1:5 | AD[13] | J1E19 |
| 7 | A3:4 | AD[28] | J1C7 | 32 | A1:4 | AD[12] | J1A20 |
| 8 | A3:3 | AD[27] | J1E7 | 31 | A1:3 | AD[11] | J1D20 |
| 9 | A3:2 | AD[26] | J1A8 | 30 | A1:2 | AD[10] | J1E20 |
| 10 | A3:1 | AD[25] | J1D8 | 29 | A1:1 | AD[9] | J1B21 |
| 11 | A3:0 | AD[24] | J1E8 | 28 | A1:0 | AD[8] | J1C21 |
| 12 | A2:7 | AD[23] | J1C9 | 27 | A0:7 | AD[7] | J1A22 |
| 13 | A2:6 | AD[22] | J1E9 | 26 | A0:6 | AD[6] | J1D22 |
| 14 | A2:5 | AD[21] | J1A10 | 25 | A0:5 | AD[5] | J1E22 |
| 15 | A2:4 | AD[20] | J1D10 | 24 | A0:4 | AD[4] | J1B23 |
| 16 | A2:3 | AD[19] | J1E10 | 23 | A0:3 | AD[3] | J1C23 |
| 17 | A2:2 | AD[18] | J1A11 | 22 | A0:2 | AD[2] | J1E23 |
| 18 | A2:1 | AD[17] | J1B11 | 21 | A0:1 | AD[1] | J1A24 |
| 19 | A2:0 | AD[16] | J1C11 | 20 | A0:0 | AD[0] | J1D24 |

Group A Mictor connector

| Mictor Pin Number | TLA700 Channel | CPCI Signal Name | CPCI Pin # | Mictor Pin Number | TLA700 Channel | CPCI Signal Name | CPCI Pin # |
|-------------------|----------------|------------------|------------|-------------------|----------------|------------------|------------|
| 3 | CLK:3 | CLK | J1D6 | 36 | QUAL:1 | INTP# | J1D4 |
| 4 | C3:7 | INTS# | J1E4 | 35 | C1:7 | PERR# | J1E17 |
| 5 | C3:6 | SERR# | J1A18 | 34 | C1:6 | LOCK# | J1E16 |
| 6 | C3:5 | GNT# | J1E5 | 33 | C1:5 | 66EN | J1D21 |
| 7 | C3:4 | REQ# | J1A6 | 32 | C1:4 | PCIXCAP | J1B16 |
| 8 | C3:3 | INTD# | J1E3 | 31 | C1:3 | PAR64 | J2E5 |
| 9 | C3:2 | INTC# | J1C3 | 30 | C1:2 | IDSEL | J1B9 |
| 10 | C3:1 | INTB# | J1B3 | 29 | C1:1 | --- | --- |
| 11 | C3:0 | INTA# | J1A3 | 28 | C1:0 | --- | --- |
| 12 | C2:7 | C/BE[3]# | J1A9 | 27 | C0:7 | RST# | J1C5 |
| 13 | C2:6 | C/BE[2]# | J1E11 | 26 | C0:6 | PAR | J1D18 |
| 14 | C2:5 | C/BE[1]# | J1E18 | 25 | C0:5 | C/BE[7]# | J2C4 |
| 15 | C2:4 | C/BE[0]# | J1E21 | 24 | C0:4 | C/BE[6]# | J2E4 |
| 16 | C2:3 | STOP# | J1D16 | 23 | C0:3 | ACK64# | J1E24 |
| 17 | C2:2 | TRDY# | J1E15 | 22 | C0:2 | REQ64# | J1B25 |
| 18 | C2:1 | IRDY# | J1C15 | 21 | C0:1 | C/BE[5]# | J2A5 |
| 19 | C2:0 | FRAME# | J1B15 | 20 | C0:0 | C/BE[4]# | J2D5 |

Group C Mictor connector

| Mictor Pin Number | TLA700 Channel | CPCI Signal Name | CPCI Pin # | Mictor Pin Number | TLA700 Channel | CPCI Signal Name | CPCI Pin # |
|-------------------|----------------|------------------|------------|-------------------|----------------|------------------|------------|
| 3 | QUAL:0 | HEALTHY | J1B4 | 36 | CLK:2 | ENUM | J1C25 |
| 4 | D3:7 | AD[63] | J2A6 | 35 | D1:7 | AD[47] | J2C10 |
| 5 | D3:6 | AD[62] | J2B6 | 34 | D1:6 | AD[46] | J2E10 |
| 6 | D3:5 | AD[61] | J2C6 | 33 | D1:5 | AD[45] | J2A11 |
| 7 | D3:4 | AD[60] | J2E6 | 32 | D1:4 | AD[44] | J2D11 |
| 8 | D3:3 | AD[59] | J2A7 | 31 | D1:3 | AD[43] | J2E11 |
| 9 | D3:2 | AD[58] | J2D7 | 30 | D1:2 | AD[42] | J2A12 |
| 10 | D3:1 | AD[57] | J2E7 | 29 | D1:1 | AD[41] | J2B12 |
| 11 | D3:0 | AD[56] | J2A8 | 28 | D1:0 | AD[40] | J2C12 |
| 12 | D2:7 | AD[55] | J2B8 | 27 | D0:7 | AD[39] | J2E12 |
| 13 | D2:6 | AD[54] | J2C8 | 26 | D0:6 | AD[38] | J2A13 |
| 14 | D2:5 | AD[53] | J2E8 | 25 | D0:5 | AD[37] | J2D13 |
| 15 | D2:4 | AD[52] | J2A9 | 24 | D0:4 | AD[36] | J2E13 |
| 16 | D2:3 | AD[51] | J2D9 | 23 | D0:3 | AD[35] | J2A14 |
| 17 | D2:2 | AD[50] | J2E9 | 22 | D0:2 | AD[34] | J2B14 |
| 18 | D2:1 | AD[49] | J2A10 | 21 | D0:1 | AD[33] | J2C14 |
| 19 | D2:0 | AD[48] | J2B10 | 20 | D0:0 | AD[32] | J2E14 |

Group D Mictor connector

| Mictor Pin Number | TLA700 Channel | CPCI Signal Name | CPCI Pin # | Mictor Pin Number | TLA700 Channel | CPCI Signal Name | CPCI Pin # |
|-------------------|----------------|------------------|------------|-------------------|----------------|------------------|------------|
| 3 | QUAL:3 | --- | --- | 36 | QUAL:2 | --- | --- |
| 4 | E3:7 | --- | E4 | 35 | E1:7 | --- | --- |
| 5 | E3:6 | --- | D4 | 34 | E1:6 | --- | --- |
| 6 | E3:5 | --- | D42 | 33 | E1:5 | --- | --- |
| 7 | E3:4 | --- | D40 | 32 | E1:4 | --- | --- |
| 8 | E3:3 | --- | D28 | 31 | E1:3 | --- | --- |
| 9 | E3:2 | --- | E27 | 30 | E1:2 | --- | --- |
| 10 | E3:1 | --- | E26 | 29 | E1:1 | --- | --- |
| 11 | E3:0 | --- | C26 | 28 | E1:0 | --- | --- |
| 12 | E2:7 | --- | E30 | 27 | E0:7 | --- | --- |
| 13 | E2:6 | --- | D21 | 26 | E0:6 | --- | --- |
| 14 | E2:5 | --- | E42 | 25 | E0:5 | --- | --- |
| 15 | E2:4 | --- | E40 | 24 | E0:4 | --- | --- |
| 16 | E2:3 | --- | E28 | 23 | E0:3 | --- | --- |
| 17 | E2:2 | --- | C28 | 22 | E0:2 | --- | --- |
| 18 | E2:1 | --- | D27 | 21 | E0:1 | --- | --- |
| 19 | E2:0 | --- | D26 | 20 | E0:0 | --- | --- |

Group E Mictor connector

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:

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

TEL: 877-595-8116
FAX: 877-595-8118

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

PICMG 2.1 R2.0 Compact PCI Specification

Revision 3.0; January 2001

Published by:

PCI Industrial Computers Manufacturers Group

401 Edgewater Place

Suite 500

Wakefield MA 01880 USA

TEL: 617-224-1100

FAX: 781-224-1239

PCI Local Bus Specification

Production Version; Revision 2.1s - June 1, 1995

Published by:

PCI Special Interest Group

PO Box 14070

Portland OR 97214

800-433-5177 (U.S.)

503-797-4207 (International)

503-234-6762 (FAX)

PCI System Architecture

Third Edition

Mindshare, Inc. (Tom Shanley / Don Anderson)

Published by Addison Wesley

ISBN 0-201-40993-3

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