

The Bus Analyzer



RAMBUS[®]



DIMM, SIMM

ISA

SCSI

Q1 '00

VME64



DDR Under Investigation

FuturePlus Systems is investigating the possibility of introducing an analysis probe for the Double Data Rate (DDR) memory bus. If you would be interested in such a product and would like to be contacted when more details are available, please send your contact information to sales@futureplus.com and indicate you are interested in DDR. We will contact you when we have more information.

Employment Opportunity: Marketing Engineer

FuturePlus Systems is looking for a marketing engineer in the Colorado Springs Office. This person will provide telephone and email pre-sales technical support, write application notes and product data sheets, and develop strategic software tools. They will also develop product marketing plans, generate proposals leading to new product lines or expansion of existing ones, and attend trade shows to promote company products and present technical papers. A BSEE/MSEE with 5 year's minimum experience in the computer industry and proficiency with an Agilent logic analyzer is required. Check our web site for full details.

Manufacturing/Product Development Has Moved

FuturePlus Systems' Manufacturing/Product Development Site has moved to a new location to gain much needed space. The new address is as follows:

*FuturePlus Systems
15 Constitution Drive
Bedford, NH 03110*

This address is for technical support, return shipments and repairs. The remit to address remains unchanged.

ABOUT THIS NEWSLETTER

The Bus Analyzer is provided free by FuturePlus Systems Corporation to our customers and developers in the computer design industry. FuturePlus Systems Corporation is a Value-Added Business Partner of Agilent Technologies and provides easy-to-use state of the art test equipment to engineers and computer scientists around the globe. We can be reached at:

FuturePlus Systems Corporation
2790 N. Academy Blvd., Suite 307
Colorado Springs, CO 80917-5329
TEL: (719) 380-7321
FAX: (719) 380-7362
Sales Support: sales@futureplus.com
Technical Support: tech_sup@futureplus.com
World Wide Web: www.futureplus.com



Agilent Technologies
Innovating the HP Way

Premier Solution Partner

FuturePlus Systems is a member of:
The PCI Special Interest Group
The USB Implementers Forum
The AGP Implementers Forum
Agilent Channel Partners (Premier Level)
IEEE-1394 Trade Association

INDUSTRY NEWS Upcoming Events

The 2000 Conference season is in full swing. The upcoming conferences, on the FuturePlus schedule, are the Applied Computing Conference (formerly PC Developers' Conference) and the 1394 Developers' Conference. Stop by our booth and say hello! **Applied Computing Conference**, Santa Clara: May 22th-25th. **1394 Developers' Conference**, San Jose: June 20th-22nd. **Intel Developers' Forum**, Santa Clara: Fall 2000.

SCSI 160 Now Shipping

A new SCSI analysis probe, FS2232, began shipping in February. It is similar in function to the FS2231 analysis probe, except that it supports the new SCSI Ultra 3 speed of 160 MB/s.

The FS2232 requires 2 logic analyzer pods for state analysis and 4 for simultaneous state and timing analysis. For specific information, pricing, and availability on the FS2232, please visit us on the web at www.futureplus.com.

Attention FS2210 ISA Bus Analysis Probe Users:

FuturePlus will be discontinuing the FS2210 ISA Bus Analysis Probe within a few weeks. In order to make sure we can fill your needs we need to have you place your orders promptly if you intend to purchase the FS2210.

IN THIS ISSUE:

- ① NEW PC133/PC100 STATE ANALYSIS PROBE
- ② NEW PCI-X ANALYSIS PROBE
- ③ SCSI 160 NOW SHIPPING

Planned support for PCI-X from FuturePlus Systems

FuturePlus Systems plans to support PCI-X with three new Analysis Probe products for use with Agilent Logic Analyzers.

- FS2104/5 PCI-X STATE Analysis Probe with Compliance Violation Detection
- FS2007 PCI-X State and Timing Analysis Probe with extender card connector
- FS1104 PCI-X Software Transaction Inverse Assembler for embedded PCI-X applications

FS2104/5 PCI-X State Analysis Probe with Compliance Violations

FuturePlus Systems and Agilent Technologies have combined their talents to produce a 133 MHz PCI-X state analysis probe for use with Agilent logic analyzers. This product will perform complete state analysis of the PCI-X bus and detect over 50 PCI-X compliance violations. The product provides many bus observer signals that allow for easy triggering and store qualification. The bus observer signal group includes such groupings as xact_cmd, bus_state, and term. The “xact_cmd” is the latched command information and is valid from the address phase until the end of the cycle. “Bus_state” (Figure 1) indicates what state the bus is in, on every clock tick. These signals allow the user to capture and filter specific bus states.

Another powerful bus observer signal group is “term”; these signals indicate the following termination conditions master abort, split response, target abort, single data phase disconnect, retry, disconnect on next ADB, master completion.

The protocol compliance checking covers 53 possible violations. There will be a LED display that will indicate the first violations to occur; this display will be cleared when the protocol checker is reset. The state listing will indicate on four separate states the first violations that have occurred during this capture. The next four states will indicate all protocol errors that have occurred during the present run. Each of the 53 possible errors may be masked individually by setting the appropriate masking switch. The FS2104 is a daughter card that plugs on to the Agilent E2929A exerciser/protocol checker card and thus takes only one PCI-X slot; the entire solution is denoted as the FS2105. This solution comes complete with software that runs on the Agilent logic analyzer. Availability is early summer '00.

FS2007 PCI-X State and Timing Analysis Probe with extender card connector

FuturePlus Systems will leverage a non-intrusive high speed cabling scheme to bring to market an interposer solution for PCI-X. This product will be ideal for customers who have only one slot on a given PCI-X segment. The analysis probe extender card connector allows for one PCI-X card and the included cabling scheme does not intrude into adjacent slots. This solution will offer both timing and state analysis for PCI-X up to 133 MHz (Figure 2). Included with the product is software that runs on the logic analyzer that decodes all of the PCI-X and PCI transactions. Availability is early summer '00.

Bus state	Meaning
No_sync	After Reset this state is entered.
idle	Bus is idle both Frame# and IRDY# are deasserted
dac1	The first half of a dual address cycle
addressing	Address phase of a single address cycle
dac2	The second half of a dual address cycle
attribute	This phase provides more information about the cycle
target respond	Where the target claims the transaction by asserting DEVSEL#
wait	TRDY# has not been asserted as yet
transfer	Data transfer is taking place, both IRDY# and TRDY are asserted
recovering	One clock where FRAME# and IRDY# are still asserted and while TRDY# and DEVSEL# are both deasserted.
decoding	One or more clocks between attribute and target respond
termination	One clock after terminations i.e. target abort

Figure 1: FS2104/05 Bus States

Continued on Page 3

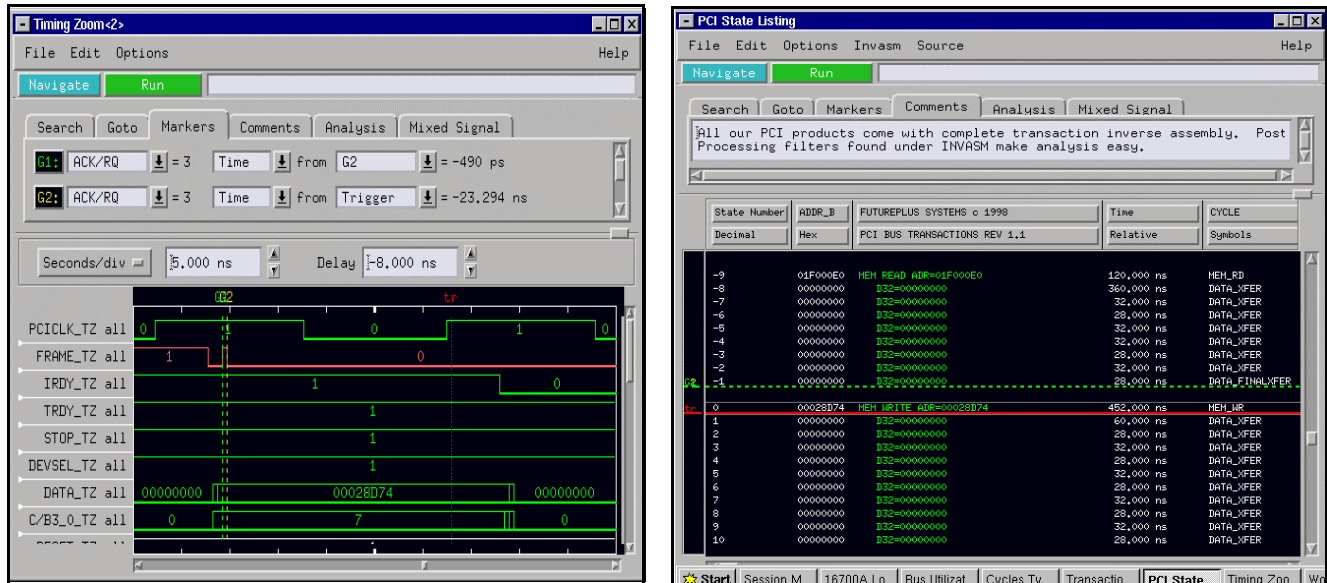


Figure 2: With the FS2007 and the Agilent 16717 users will get simultaneous 2 GHz Timing and State analysis

FS1104 PCI-X Software Transaction Inverse Assembler for embedded PCI-X transactions

Continuing its commitment to the embedded PCI industry, FuturePlus will make available its PCI-X licensed software to be used with Agilent logic analyzers. This software is ideal for customers who make their own custom analysis probes or use the suggested MICTOR connector layout given in the FuturePlus Systems Application Note on Embedded PCI probing. This solution will allow embedded customers to have the same advantages for debugging as customers who have a standard connector.

The FS1104 will consist of:

- Configuration files for the Agilent HP16715/6/7/9 logic analyzers
- PCI/PCI-X Inverse Transaction Assembler
- Users Manual

Availability for this product is June 2000.

PC133/PC100 State Analysis Probe Introduced

FuturePlus Systems announces a new addition to our line of bus analysis probes for memory sub-systems. The FS2321 State Analysis Probe provides bus state analysis for PC133/PC100 systems. The fast data transfer rate, large number of signals and physically restricted space found in PC133/PC100 systems make observing memory transactions a significant challenge for system analysis and debug. The FS2321 helps you to overcome these obstacles.

The FS2321 probe plugs into an unused 168-pin DIMM socket and connects to an Agilent Logic Analyzer using controlled-impedance cables. By using integrated terminations and a direct connection to the logic analyzer, the FS2321 provides the high density, high speed connection necessary for observing PC133/PC100 systems with minimal mechanical and electrical intrusion. Signals are clocked to the logic analyzer at the full 133 MHz clock rate of the system (100 MHz for PC100 systems). The FS2321 inverse assembler decodes the memory systems signals into easily understood bus transactions showing commands and data.

The FS2321 probe plugs into an unused 168-pin DIMM socket and connects to an Agilent Logic Analyzer using controlled-impedance cables. By using integrated terminations and a direct connection to the logic analyzer, the FS2321 provides the high density, high speed connection necessary for observing PC133/PC100 systems with minimal mechanical and electrical intrusion. Signals are clocked to the logic analyzer at the full 133 MHz clock rate of the system (100 MHz for PC100 systems). The FS2321 inverse assembler decodes the memory systems signals into easily understood bus transactions showing commands and data.

The FS2321 requires 6 logic analyzer pods (102 channels) and supports the 16715A, 16716A, 16717A, 16718A, and 16719A logic analyzers using a 16700A or 16702A Logic Analysis System. The FS2321 lists for \$3000 (USA/Canada only) and deliveries begin May 1, 2000.

FuturePlus Systems Literature - Q1 '00

THIS INFORMATION IS NOW AVAILABLE TO DOWNLOAD FROM OUR WEBSITE AT WWW.FUTUREPLUS.COM

PRESENTATIONS

- **CompactPCI Bus Compliance Testing** - Paper presented at HP's *Design SuperCon '98*
- **PCI Local Bus Compliance Testing** - Paper presented at HP's *Design SuperCon '97*
- **USB Bus Compliance Testing** - Paper presented at HP's *Design SuperCon '97*
- **Embedded PCI Test** - Paper presented at HP's *Design SuperCon '96*
- **Back Issues Of The Bus Analyzer**

TECHNICAL INFORMATION

- PCI Compliance Testing and Capturing PCI Bus Transactions With Active Analysis Probes
- Capturing PCI Bus Transactions With Passive PCI Analysis Probes
- Capturing USB Bus Transactions With The USB Analysis Probes
- Designing A Custom Connection To A 32-bit Embedded PCI Bus
- Designing A Custom Connection To A 64-bit Embedded PCI Bus

DATA SHEETS

- FS2000 - 32-bit PCI Bus Analysis Probe and Extender, (FS16P32E)
- FS2001 - 32/64-bit PCI Bus Analysis Probe, (FS16P64)
- FS2004 - 32-bit PCI CardBus Analysis Probe and Extender, (FSPCB32E)
- FS2005/FS2006 - 64-bit PCI Analysis Probe and Extender, 66 MHz Passive, 3.3v,5v
- FS2007 - 64-bit PCI-X Bus Passive Analysis Probe and Extender, 133 MHz
- FS2100,2101 - 32/64-bit PCI Bus Analysis Probe and Extender, (FSPCI64E-3,5)
- FS2102,2103 - 64-bit PCI Analysis Probe and Extender, 66 MHz Active, 3.3v,5v
- FS2104 - 64-bit PCI-X Bus Analysis Adapter board for Agilent E2929A
- FS2210 - ISA Bus Analysis Probe and Extender, (FS16ISA)
- FS2220 - 32-bit Accelerated Graphics Port Probe and Extender, (FSAGP32TE)
- FS2221 - AGP4x Analysis Probe
- FS2222 - Rambus Analysis Probe for RIMM Socket
- FS2224 - Rambus Analysis Probe for GP Socket
- FS2230,FS2231, FS2232 - SCSI Bus Analysis Probe, (FSSCSIA, FSSCSIB)
- FS2310 - SIMM Analysis Probe and Extender, (FSSIMPE)
- FS2320 - DIMM Analysis Probe and Extender, (FSDIMPEA)
- FS2321 - PC100/133 DIMM Analysis Probe
- FS3010 - 32-bit PCI Mezzanine Bus Analysis Probe and Extender, (FSPMC32E)
- FS3020 - 32/64-bit CompactPCI Analysis Probe and Extender, (FSCPCI64)
- FS3030 - 32 Bit PCI EIO LogicScope Analysis Probe & Extender, 33 MHz
- FS3100 - 32/64-bit VME/VXI Bus Analysis Probe and Extender, (FSVME64E)
- FS4100 - Universal Serial Bus (USB) Analysis Probe, (FSUSB)
- FS4200 - IEEE 1394 Analysis Probe
- FS4300 - Fibre Channel Analysis Probe

** Also, on our Website, you can subscribe to the *Bus Analyzer* Newsletter, download User's Manuals and Quicksheets and product software updates. **