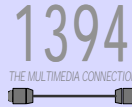


The Bus Analyzer



RAMBUS™



DIMM, SIMM

ISA SCSI

Q4 '99

VME64



Introducing Agilent Technologies

On Nov. 1, 1999 a portion of Hewlett-Packard Company became Agilent Technologies. Agilent's roots are in the earliest days of Hewlett-Packard Company, which started as a test and measurement company in 1939 with the production of the company's first audio oscillator. Agilent is the world's leading designer, developer, manufacturer and provider of communications components as well as electronic and optical test, measurement and monitoring instruments, systems and solutions. The company's customers span key industries, including electronics, communications, semiconductors, healthcare and life sciences.

Agilent's Electronic Products and Solutions Group is a leading supplier of test and measurement instrumentation for the electronics industry, including manufacturers of computer equipment. FuturePlus Systems has joined the new Agilent Technologies Value-Added Business Program called Channel Partners, and has been designated a Premier Solutions Partner of that program. As such we work closely with Agilent to make sure that the products we are introducing are not only completely compatible with Agilent logic analyzers, but are equipped with the right features and performance to meet the needs of Agilent's customers. Agilent has been designated an official distributor of FuturePlus Systems products. If you have questions about the new Agilent Technologies, visit their web site at www.agilent.com.

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
The IEEE-1394 Trade Association
Agilent Channel Partners (Premier Level)

INDUSTRY NEWS Upcoming Events

The 2000 Conference season will soon be upon us. FuturePlus will be participating in the IDF Conference, the Applied Computing Conference (formerly PC Developers' Conference) and the 1394 Developers' Conference. Stop by our booth and say hello! **IDF Conference:** February 15th-17th. **Applied Computing Conference,** Santa Clara: May 22th-25th. **1394 Developers' Conference,** San Jose: June 20th-22nd.

Agilent Introduces Two New LA Cards

Agilent has just introduced two new logic analyzer state and timing modules (16718A and 16719A) that are supported in the 16700A and 16702 mainframes. Both of the new cards have a maximum state speed of 333 MHz. Both cards are 4 pods or 68 channels wide, with a maximum of 340 channels on a single time base and trigger. They come in two memory depths, 8 MB for the 16718A and 32 MB for the 16719A. You may use FuturePlus configuration files for the 16555 family with these new modules. To get more details of these modules contact Agilent Technologies.

INSIDE

- ① NEW SCSI 160 ANALYSIS PROBE ANNOUNCED
- ② NEW RAMBUS ANALYSIS PROBE TESTS FULLY LOADED CHANNEL

SCSI 160 Analysis Probe Introduced

A new SCSI analysis probe has been announced by FuturePlus. The FS2232 is similar in function to the FS2231 Analysis Probe, except that it supports the new SCSI Ultra 3 speed of 160 MB/s. Ultra-3 SCSI is a draft specification (current Revision 11) which is in development.

There are 5 new features described by this specification: Double Transition clocking (DT), Cyclic Redundancy Checking (CRC), domain validation, packetization and Quick Arbitration and Select (QAS).

Ultra 160/m is a subset of Ultra 3 SCSI, incorporating the three features of ULTRA 3 that the industry leaders deem necessary for reaching their performance and reliability goals. The three features are Double edge clocking, CRC and Domain validation. The SCSI signals I/O, CMD and MSG describe 8 possible phases for the SCSI bus; 6 of the 8 possible phases are already used in ULTRA 2 SCSI. The two previously unused phases are now used to indicate Dual Transition (DT) Data Out and DT Data In. Data may be clocked on the rising and falling edge of REQ in the case of the DT Data In or the rising and falling edge of ACK in the case of DT Data Out. The ACK or REQ is 25 NS, using both edges and coupled with two bytes of data being transferred per edge gives a potential transfer rate of 160 Mega Bytes per second.

The DT data phases are not parity protected but are CRC protected, with the CRC being the last data transferred in the packet. The SCSI signal P_CRCA (formerly P) indicates whether the data is real data (P=0), fill data or CRC data (P=1). The new FS2232 supports the Ultra 2 cycles with user selectable parity detection and the new Ultra 160 cycles. The Inverse Assembler displays the new QAS message and PPR negotiation. The SCSI command specification allows for 7 different device types. Most commands are common among the devices, but each device type has some unique commands. In the 16500 System frame the user can load several alternative Inverse Assemblers to decode the commands according to devices other than the default (Disk).

If the FS2232 product is used with the Agilent 16700A or 16702A System frames, the user may select an alternate device decode using the Invasm preferences.

The FS2232 requires 2 logic analyzer

pods for state analysis and 4 for simultaneous state and timing analysis. The FS2232 is priced at \$3,500 and first shipments are targeted for Feb. 1, 2000. Full details on the FS2232 may be found on the FuturePlus website.

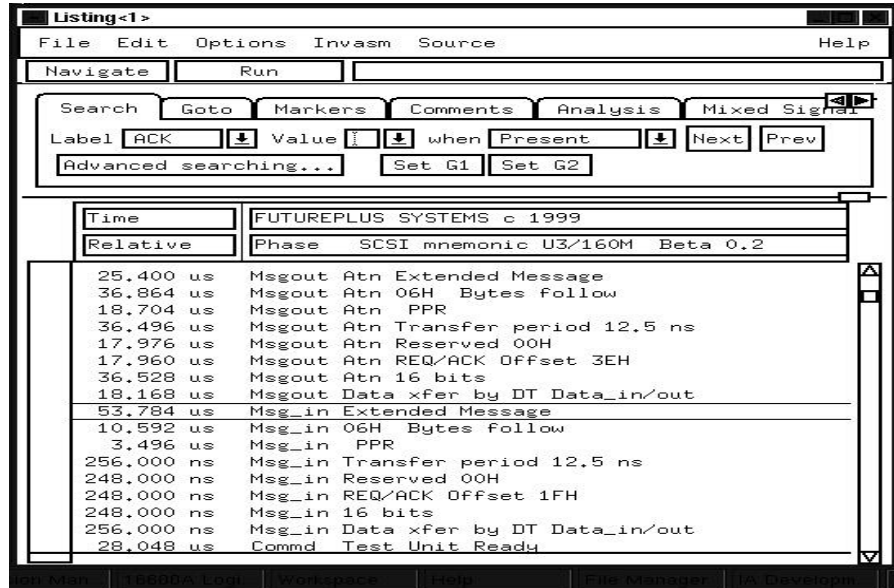


Figure 1 - The screen shot above displays the negotiation between the two devices to use the dual transition data phases.

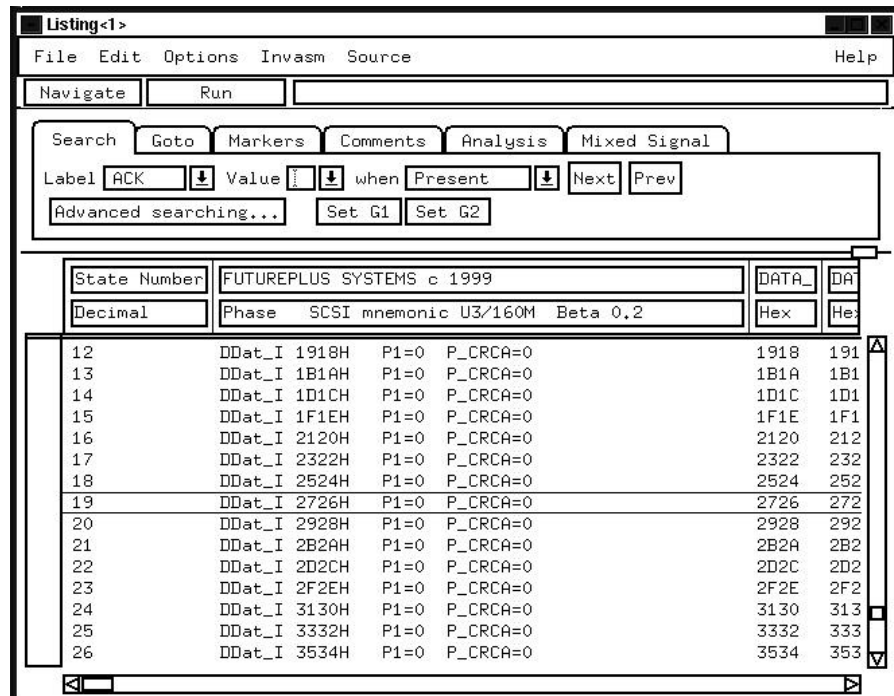


Figure 2 - This screen shot shows a typical Dual transition data phase as captured by the FS2232.

General Purpose Probing Version of the Rambus Analysis Probe Introduced

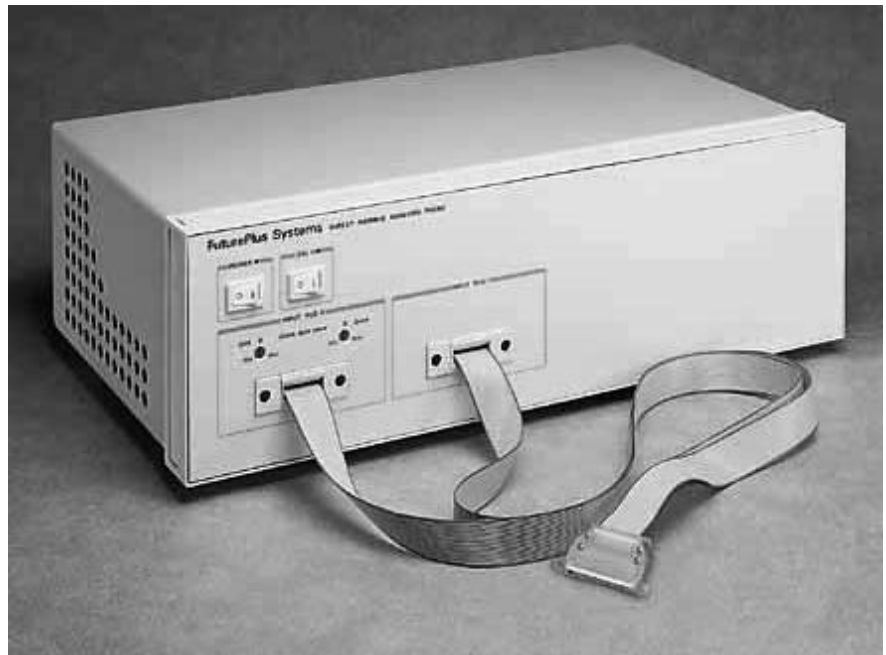
A new version of the FS2222 Rambus Analysis Probe has been announced by FuturePlus and is now shipping. While the FS2222 requires one of the RIMM sockets on the Rambus Channel to analyze traffic, the FS2224 connects to the Channel with a special Robinson Nugent connector. There are at least three advantages to this method: (1) the user can now test a fully loaded Rambus Channel; (2) because the special connector is mounted very close to the Rambus Access Controller (RAC), there is a high probability of observing accurate READ traffic; and (3) if the user has not planned to use RIMM sockets in their implementation, they now have a way of analyzing the Rambus Channel. The special test connector is designed into the target system and can then be left off in production.

The FS2224 requires 1 of the 16517A cards, three of the 16518A cards, and a 16700A or 16702A if the user is operating the Channel at the full 400 MHz (800 MT/s) speed. If the user is operating at 300 MHz (600 MT/s), two of the 16715A, 716A, 717A, 718A and 719A logic analyzer modules for the 16700A or 16702A are supported. An inverse assembler is included that reconstructs the Rambus transactions from the received data. The FS2224 is priced at \$19,995, and delivery is 4 weeks. Full details on the FS2224 may be found on the FuturePlus website.

The logic analyzer trace shown top right displays Rambus transactions. ROW, COL, and DATA packets for write transactions are listed, along with the byte masking for the related data. Different packet types are shown in different colors to make it easy to identify them.

The FS2224 Rambus Analysis Probe for General Purpose probing is shown to the right.

State Number		RAMBUS TRANSACTIONS REV 1.3	
Decimal	ROW	COLUMN	DATA
3568	ROWR DR=09	BR=09	ROP=PRER REFP ATTN
3569			
3570			
3571			
3576	ROWA DR=09	BR=09	R10:0=5BF
3577			
3578			
3579			
3585			COLC WR DC=09 BC=09 AC=32
			COLX NOXOP DX=00 BX=00
3586			
3587			
3588			
3589			COLC WR DC=09 BC=09 AC=33
			COLX NOXOP DX=00 BX=00
3590			
3591			
3592			
3593			COLC NOCOP DC=09 BC=09 AC=32
			COLX NOXOP DX=00 BX=00
3594			
3595			D31:00=52945294
			D63:32=56B556B4
			D95:64=4E7356B5
			D127:96=DEF756B5
3596			
3597			COLC NOCOP DC=09 BC=09 AC=33
			COLX NOXOP DX=00 BX=00
3598			
3599			D31:00=DAD66318
			D63:32=5EF75EF3
			D95:64=F7BB631D
			D127:96=63186318
3600			
3601			
3602			
3604	ROWR DR=09	BR=09	ROP=PRER ATTN
3605			
3606			
3607			
3612	ROWA DR=09	BR=09	R10:0=5BE
3613			
3614			



FuturePlus Systems Literature - Q4 '99

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
- 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
- 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)
- 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, Quicksheets and product software updates. If you are interested in receiving the PCI Compliance Checklist on a diskette please email your request to sales@futureplus.com

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