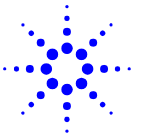

Agilent Technologies

Innovating the HP Way

IEEE 1394 Interface Startup Guide

Notice

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Printing history

New editions of this guide are issued to reflect extensive changes made to the software. Revisions may be issued, between editions, to correct errors in the manual. There may not be a new edition issued in conjunction with every application release. The application release, at the date of printing, is noted in the following table.

Manual Name: Agilent Technologies IEEE 1394 Interface Installation Guide
Manual Part Number: E6293-94000

Edition	Printing Date	Application Version
1	December, 1999	A.05.02
2	June, 2000	A.06

Product support

Contact your local Agilent Technologies representative or see "How to contact us", page 1-4.

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Printed in Canada

Certification

Agilent Technologies certifies that this product met its published specifications at the time of shipment from the factory. Agilent Technologies further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology (formerly National Bureau of Standards), to the extent allowed by that organization's calibration facility, and to the calibration facilities of other International Standards Organization members.

Additional Information for Test and Measurement Equipment

To comply with EMC regulations, shielded cables should be used on all appropriate connections. Otherwise, the user has to ensure that, under operating conditions, the Radio Interference Limits are still met at the border of the user's premises.

Warnings

The following general safety precautions must be observed during all phases of operation, service, and repair of this product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the product. Agilent Technologies assumes no liability for the customer's failure to comply with these requirements.

Ground the Equipment: For safety, Class 1 equipment (equipment having a protective earth terminal), an uninterruptible safety ground must be provided from the mains power source to the product input wiring terminals or supplied power cable. Before operating the equipment, guard against electric shock in case of fault by always using the provided 3-conductor power cord to connect the equipment to a grounded power outlet.

DO NOT use in hazardous environments: Do not operate the product in an explosive atmosphere or in the presence of flammable gases or fumes. This product is designed for indoor use only.

DO NOT use repaired fuses or short-circuited fuse holders: For continued protection against fire, replace line fuses only with fuses of the same voltage and current rating and type.

Keep away from live circuits: Operating personnel must not remove equipment covers or shields. Procedures involving the removal of covers and shields are for use by service-trained personnel only. Under certain conditions, dangerous voltages may exist even with the equipment switched off. To avoid dangerous electrical shock, DO NOT perform procedures involving cover or shield removal unless you are qualified to do so.

DO NOT operate damaged equipment: Whenever it is possible that the safety protection features built into this product have been impaired, either through physical damage, excessive moisture, or any other reason, REMOVE POWER and do not use the product until safe operation can be verified by service-trained personnel. If necessary, return the product to an Agilent Technologies Sales and Service Office for service and repair to ensure the safety features are maintained.

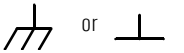
DO NOT substitute parts or modify equipment: Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification to the product. Return the product to an Agilent Technologies Sales and Service Office for service and repair to ensure features are maintained.

DO NOT clean with fluids: Doing so may make the equipment unsafe for use. Power down the equipment and disconnect the power cord before cleaning. To clean, use a soft dry cloth.

Safety Symbols

If you see this symbol on a product, you must refer to the manuals for specific Warning or Caution information to avoid personal injury or damage to the product

Indicates the field wiring terminal that must be connected to ground before operating the equipment. Protects against electrical shock in case of fault.



Frame or chassis ground terminal. Typically connects to the equipment's metal frame.

Alternating current (ac).

Direct current (dc).

Indicates hazardous voltages and potential for electrical shock.

Indicates that antistatic precautions should be taken.

This product complies with CSA requirement CSA 22.2 No. 1010.1, NRTL/C, EN 61010-1:1993 + A2:1995/IEC 1010-1:1990 + A1:1992 + A2:1995 Safety requirements for electrical equipment for measurement, control, and laboratory use.

Notice for European Community: This product complies with the relevant European legal Directives: EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC.

Das CE-Zeichen zeigt die Übereinstimmung mit allen für das Produkt geltenden Direktiven der Europäischen Union an.

ISM 1–A

This is the symbol for an Industrial, Scientific, and Medical Group 1 Class A product.

Dieses Zeichen steht für ein Produkt der Gruppe 1, Klasse A, für den Einsatz im industriuellen, wissenschaftlichen und medizinischen Bereich.

This product meets the requirements of the Australian EMC Framework (AS/NZS 2064.1/2 for ISM:1A), enforced by the Radiocommunications Act 1992.

WARNING

Calls attention to a procedure, practice, or condition that could cause bodily injury or death.

CAUTION

Calls attention to a procedure, practice, or condition that could possibly cause damage to equipment or permanent loss of data.

Certification

Agilent Technologies certifie que cet instrument est conforme aux spécifications publiées au moment de sa sortie d'usine. Agilent Technologies atteste en outre qu'il est possible de trouver référence à ses mesures d'étalonnage auprès de l'organisme de normalisation américain "United States National Institute of Standards and Technology" (auparavant National Bureau of Standards), dans la mesure des possibilités autorisées par cet organisme, et dans celles autorisées par d'autres membres de l'Organisation Internationale de Normalisation.

Informations complémentaires relatives à l 'équipement de test et de mesure

Conformément aux réglementations concernant la compatibilité électromagnétique, il convient d'utiliser des câbles blindés sur toutes les connexions appropriées. S'il n'emploie pas ce type de câble, l'utilisateur doit vérifier qu'en condition d'exploitation les interférences radio sont encore acceptables à la limite de ses locaux.

Avertissement

Les précautions générales de sécurité ci-dessous doivent être observées au cours de toutes les phases d'exploitation, de maintenance et de réparation de l'instrument. Le non-respect de ces précautions ou d'avertissements spécifiques cités ailleurs dans le manuel entraîne la violation des normes de sécurité relatives à la conception, la fabrication et l'utilisation prévue de cet instrument. Agilent Technologies n'assume aucune responsabilité en cas de non-respect de ces exigences.

Mise à la terre de l'équipement: en vue de garantir la sécurité, pour l'équipement de classe 1 (comportant une borne mise à la terre de protection), une mise à la terre permanente doit être assurée de la source d'alimentation secteur aux bornes de câblage d'entrée de l'instrument ou au câble d'alimentation fourni. Avant d'utiliser l'équipement, évitez les chocs électrostatiques en cas de défaillance de l'instrument en utilisant toujours le cordon d'alimentation 3 conducteurs fourni pour brancher l'équipement à une prise de terre.

N'UTILISEZ PAS dans un environnement à risque : N'utilisez pas l'instrument dans des conditions de risques d'explosion ni en présence de gaz ni d'émanations inflammables. Cet instrument est conçu exclusivement pour un usage intérieur.

N'UTILISEZ PAS de fusibles usagés ni de porte-fusibles en court-circuit: Pour une protection permanente contre le feu, remplacez les fusibles uniquement par des fusibles de même tension, de même calibre et de même type.

Tenez vous à l'écart des circuits sous tension: Le personnel d'exploitation ne doit pas retirer les capots ni les blindages. Les procédures impliquant ces manipulations doivent être exécutées exclusivement par un personnel formé à la maintenance. Dans certaines conditions, des tensions dangereuses peuvent être générées même lorsque l'équipement n'est pas sous tension. Afin d'éviter tout risque d'électrocution, N'EXÉCUTEZ PAS de procédure nécessitant la manipulation des capots et des blindages sans qualification à cet effet.

N'UTILISEZ PAS d'équipement endommagé: Si les caractéristiques de l'instrument relatives à la sécurité ont été atteintes, que ce soit en raison d'un dommage physique, d'une humidité excessive, ou pour toute autre cause, METTEZ L'EQUIPEMENT HORS TENSION et ne l'utilisez plus jusqu'à ce que la sécurité de son fonctionnement puisse être vérifiée par un personnel formé à la maintenance. Si nécessaire, retournez l'instrument à un bureau commercial et de service après-vente Agilent Technologies pour le faire réparer et garantir ses caractéristiques de sécurité.

NE REMPLACEZ PAS de pièce ni ne modifiez l'équipement: En raison des risques supplémentaires que cela implique, n'installez pas de pièce de remplacement ni n'exécutez aucune modification non autorisée sur l'instrument. Retournez-le à un bureau commercial et de service après-vente Agilent Technologies pour le faire réparer et garantir ses caractéristiques de sécurité.

NE NETTOYEZ PAS avec des produits liquides: L'emploi de produits liquides peut être risqué. Mettez l'équipement sous tension et débranchez le cordon d'alimentation avant le nettoyage. Utilisez un chiffon doux et sec.

Symboles de sécurité

Si vous apercevez ce symbole sur un instrument, vous devez vous référer aux manuels pour de plus amples informations concernant les notes Avertissement et Attention en vue d'éviter des blessures corporelles ou des dommages à l'instrument.

Indique la borne de câblage qui doit être connectée à la terre avant la mise en route de l'équipement. Protège contre les électrocutions en cas de défaillance de l'instrument.

 ou 

Borne de mise à la terre de cadre ou de châssis. Connectée en principe au cadre métallique de l'équipement.

Courant alternatif (ca).

Courant continu (cc).

Indique une tension dangereuse et des risques d'électrocution.

Indique que des précautions anti-statiques doivent être prises.

.

Cet instrument satisfait aux spécifications CSA 22.2 No. 1010.1, NRTL/C, EN 61010-1:1993 + A2:1995/IEC 1010-1:1990 + A1:1992 + A2:1995 en matière de sécurité pour les équipements électriques de mesure, de contrôle et de laboratoire.

Label européen: cet instrument est conforme aux directives européennes suivantes: EMC 89/336/EEC et basse tension 73/23/EEC.

Das CE-Zeichen zeigt die Übereinstimmung mit allen für das Produkt geltenden Direktiven der Europäischen Union an.

ISM 1–A

Ce symbole indique que l'instrument est un instrument de type Industriel Scientifique et Médical Groupe 1 Classe A.

Dieses Zeichen steht für ein Produkt der Gruppe 1, Klasse A, für den Einsatz im industriuellen, wissenschaftlichen und medizinischen Bereich.

Cet instrument est conforme aux spécifications de l'Australian EMC Framework (AS/NZS 2064.1/2 for ISM:1A), mises en oeuvre par le Radiocommunications Act de 1992.

AVERTISSEMENT

Attire l'attention sur une procédure, pratique ou condition comportant un risque de blessure ou d'électrocution.

ATTENTION

Souligne qu'une procédure, pratique ou condition peut entraîner des dommanges à l'équipement ou la perte permanente de données.

DECLARATION OF CONFORMITY

According to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name	Agilent Technologies Australia Limited
Manufacturer's Address	Advanced Networks Division 347 Burwood Highway Forest Hill, 3131 Victoria, Australia

declares that the product:

Product Name	IEEE1394 interface
Model Number	E6293A
Product Options	All

conforms to the following product specifications:

Safety	IEC 1010-1	
EMC	EN 55011:1991 / CISPR 11:1992 + A2:1996 (Group 1, Class A)	
	IEC 1000-3-2:1995	
	EN 50082-1:1997	
	IEC 1000-4-2:1995	4kV CD, 8kV AD[2]
	IEC 1000-4-3:1995	3 V/m, 80% AM mod @ 1Khz
	IEC 1000-4-4:1995	0.5 kV Signal Lines, 1 kV Power Lines
	IEC 1000-4-5:1995	1.0 kV Line to line, 2.0 kV Line to earth
	IEC 1000-4-6:1995	3 V level, 150 KHz to 80 MHz, Signal and Power Lines

[1] This product was tested in a typical configuration

[2] Performance may be reduced under these conditions

Supplementary Information This product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC and carries the CE-marking accordingly.

Melbourne, Australia,

Wednesday, 24 May 2000

Issue 1

Graeme Cobb - Quality Manager

European Contact: Your local Agilent Technologies Sales and Service Office or for regulatory topics only Agilent Technologies GmbH, Department HQ-TRE, Herrenberger Straße 130, D-71034 Böblingen, Germany (FAX +49-7031-14-3143)

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24-May-00

Contents

1

Introduction

Introduction

The Agilent Technologies IEEE 1394 Interface

The Agilent Technologies E6293A IEEE 1394 interface is an ISO/IEC 61883-4 compliant device for quickly and efficiently testing MPEG-2-based IEEE 1394 products, such as digital set top boxes, digital VCRs, and other home network devices.

The IEEE 1394 interface allows you to connect up to three devices directly to the bus, then transport data at speeds of S100, S200, or S400 (98.304, 196.608, or 393.216 Mb/s respectively). At the other end of the interface you can connect to any MPEGscope test system via its ASI interface to test your streams with MPEGscope applications, including

- transport stream record and play at up to 94 Mb/s, with packet-level timestamping, PID filtering, and error-based triggering
- real-time analysis of MPEG-2 transport streams carried over IEEE 1394
- transport stream off-line analysis
- custom transport stream generation
- transport stream impairment generation
- video and audio elementary stream analysis

From the IEEE 1394 interface, you can define and send AV/C commands to your test equipment. The IEEE 1394 interface, together with the MPEGscope test system, also supports ATSC stream and DVB “partial transport stream” transmission, decoding, and generation, including DIT and SIT tables and descriptors.

This guide contains information about setting up and connecting the IEEE 1394 interface to a system under test and includes the following illustrated tutorials:

- How to send a stream from your test equipment, then record and analyze it from MPEGscope, page 2-9.
- How to play a stream from MPEGscope to your test equipment, page 2-19.
- How to define and send AV/C commands, page 2-22.

The guide also cites technical specifications and applicable standards.

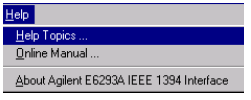
Package contents

Please ensure that your Agilent Technologies E6293A IEEE 1394 interface kit includes the following items:

- 1 – IEEE 1394 interface box
- 1 – IEEE 1394 cable
- 1 – Serial (RS-232) cable
- 2 – Coaxial (75 ohm BNC) cables
- 1 – DC (5V) power cable and universal adapter
- 1 – IEEE 1394 Installation Guide
- 1 – CD-ROM kit containing the MPEGscope base software

For more information

If you are using the MPEGscope line of products for the first time or performing a new task, the online help system can guide you quickly to information you may need. You can access help in the following ways.



Select **Help Topics** from the **Help** menu to access the help environment. You can then use **Contents**, **Index**, or **Find** to locate information about a specific topic.

You can also enter the help environment from any dialog containing a **Help** button 

. Clicking on **Help** will bring up a help topic specific to that dialog.

For troubleshooting information, select **Troubleshooting** at the IEEE 1394 interface **Contents** page.

How to contact us

If you need technical support, please contact the call center in your region.

	Location	Telephone	Email
North America	9780 South Meridian Blvd Englewood, Colorado USA 80112	1-800-698-0061	Americas_Support@agilent.com
Europe	PO Box 999 Mail Stop 70 1180 AZ Amstelveen The Netherlands	+31 20 547 9900 You may also call these local numbers:	ots-europe@agilent.com
	France UK Ireland Germany, Austria, Switzerland Italy	+33-1-69294114 +44-1344-366 666 +353-1-6158 222 +49-180-524-6333 +39-02-92 12 22 41	CUSTOMER-CARE_TFO@hp.com test-measurement_uksupport@hp.com messtechnik_support@hp.com HPI_Direct@hp-italy-gen3.om.hp.com
Japan	Hachioji Business Center 9-1 Takakura-Cho, Hachioji Tokyo 192 Japan	0120-421-345	mac_support@agilent.com
Asia Pacific	438B Alexandra Road Blk B, #05-08 Alexandra Technopark Singapore 119968	Toll Free numbers by country:	asia_ots@agilent.com
	Australia China Hong Kong India Indonesia Japan Korea Malaysia New Zealand Philippines Singapore Taiwan Thailand	1800-143-243 10800-650-0021 800-930-871 000-6517-MTF-278-1596 001-800-65-7340 0120-421-345 080-999-1500 1800-80-1454 0800-44-5841 1800-1-651-0170 1800-274-4554 0080-65-1317 001-800-65-6206	

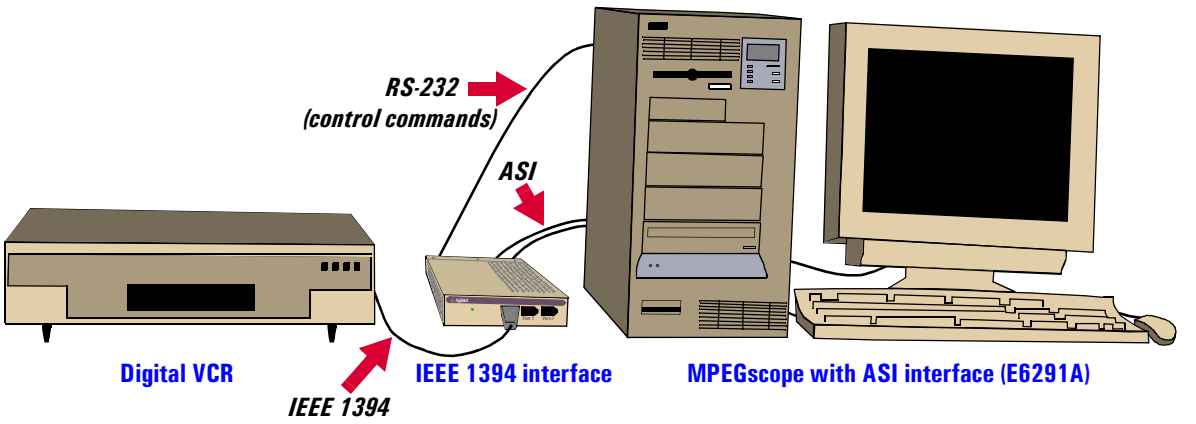
2

Testing with the IEEE 1394 Interface

Setting up the IEEE 1394 interface

This section illustrates how to connect the IEEE 1394 interface to your IEEE 1394 test equipment and to the MPEGscope Test System through its ASI (Asynchronous Serial Interface) interface. It also explains how to launch the IEEE 1394 interface application from MPEGscope.

IEEE 1394 interface installation at-a-glance



CAUTION: Electrostatic Discharge (ESD)

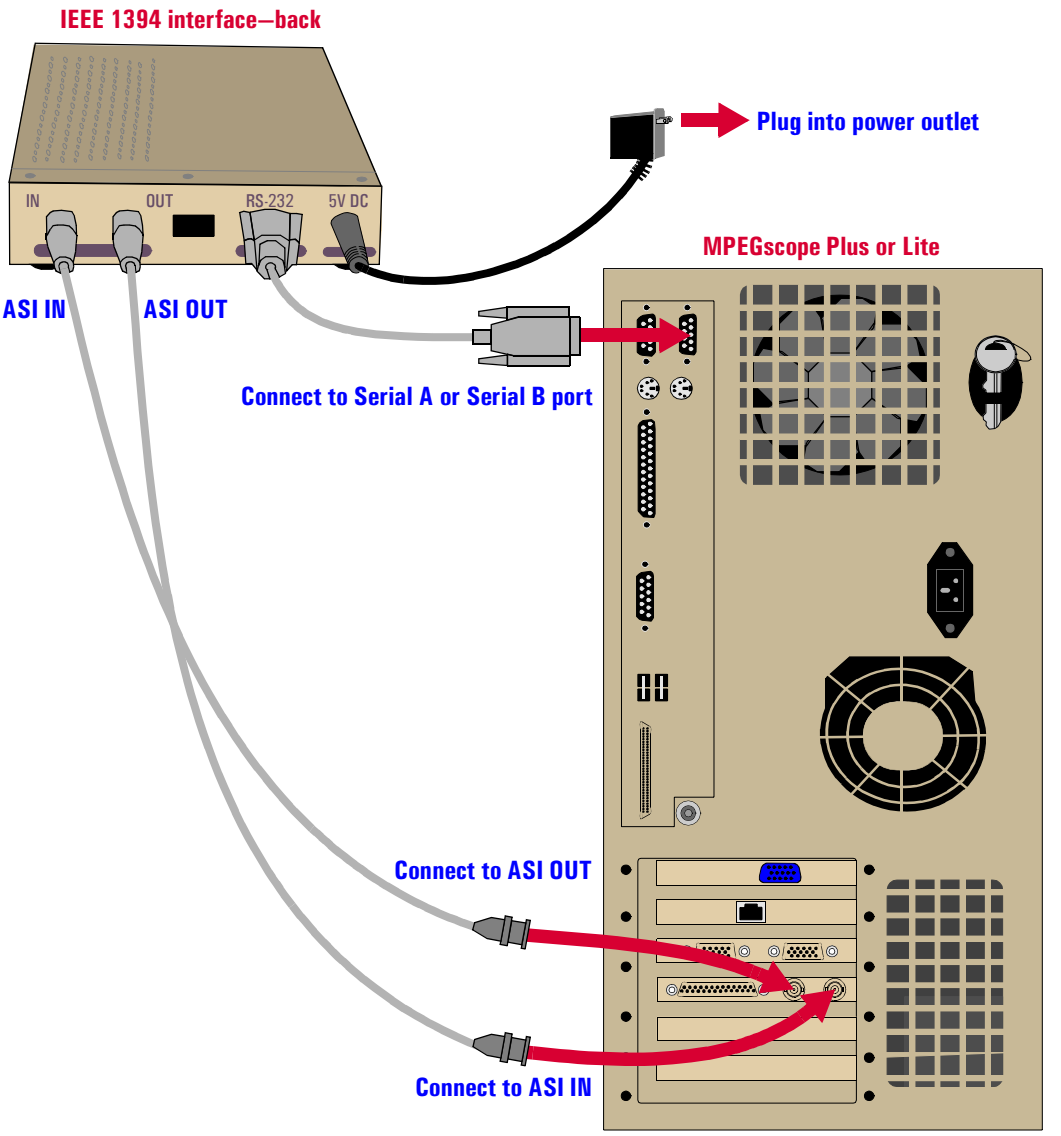
All connectors on MPEGscope and the IEEE 1394 interface are susceptible to electrostatic discharge. Take the necessary anti-static precautions to minimize electrostatic damage.

WARNING: Shock Hazards

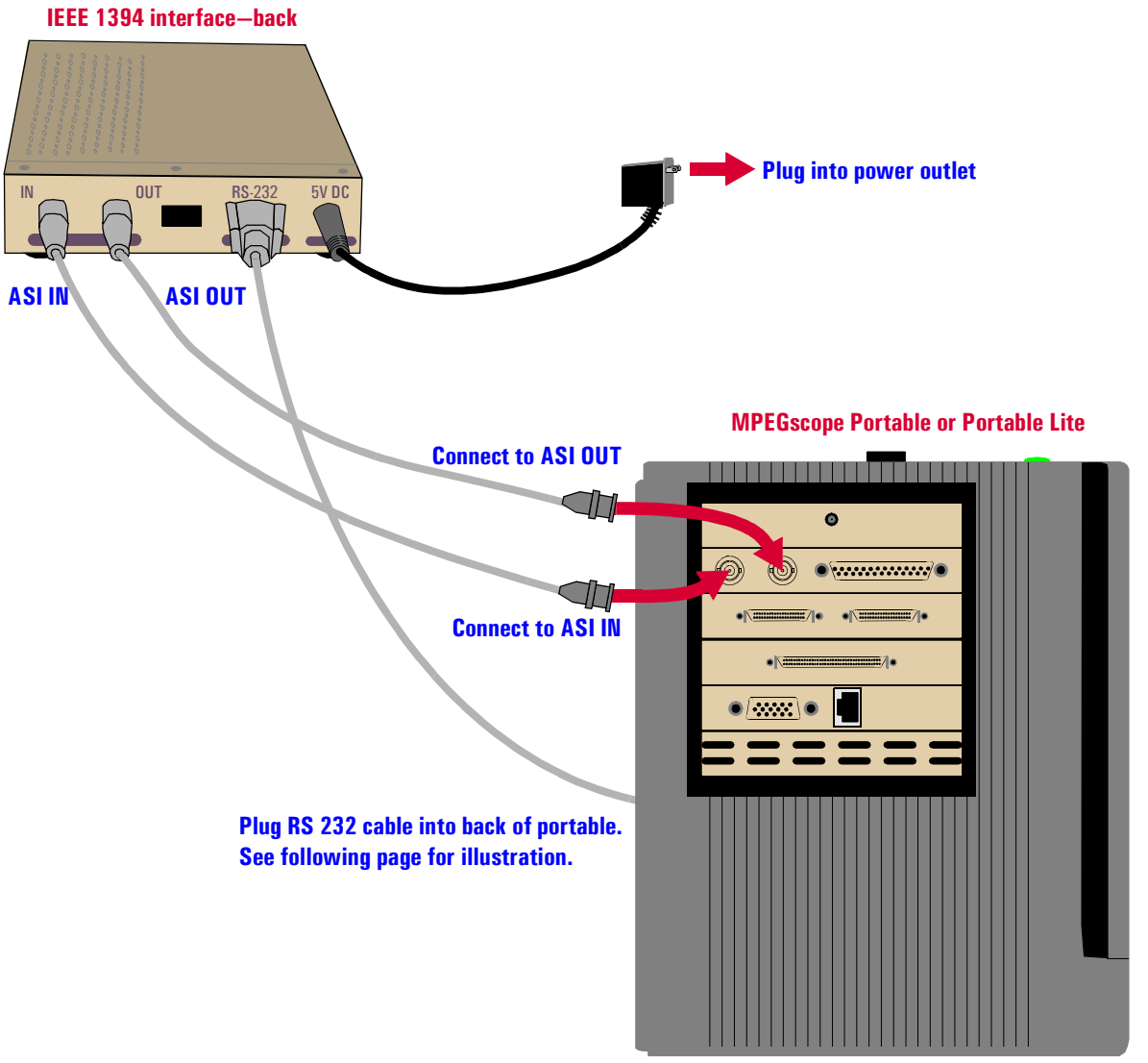
- Be aware of shock hazards when connecting equipment.
- Use the supplied power adapter which can handle the required loads and protect you from electrical shock.
- Do not defeat the purpose of MPEGscope's power cord ground, and do not block access to the power cord or switch, in case you need to disconnect power in an emergency.

Step 1: Connect the IEEE 1394 interface to MPEGscope

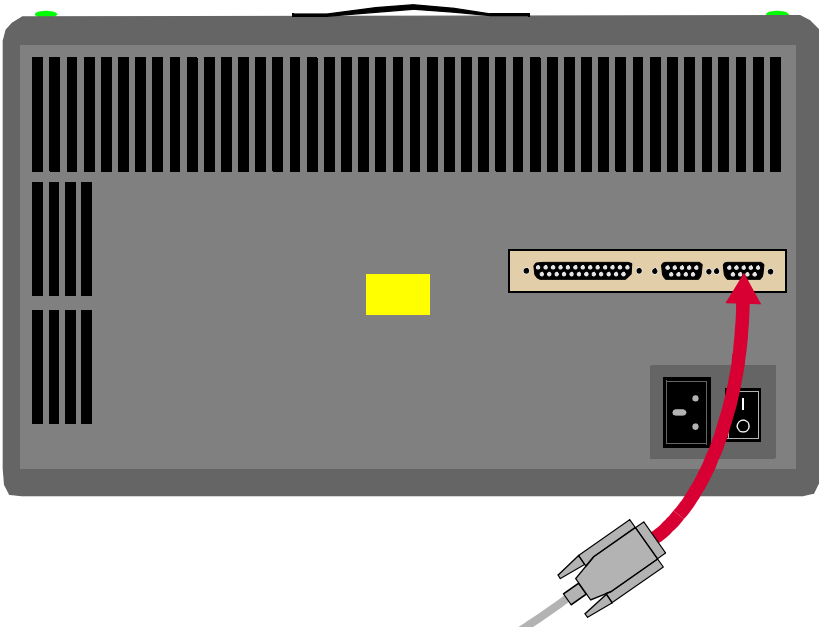
Connecting to MPEGscope Plus or Lite



Connecting to MPEGscope Portable or Portable Lite



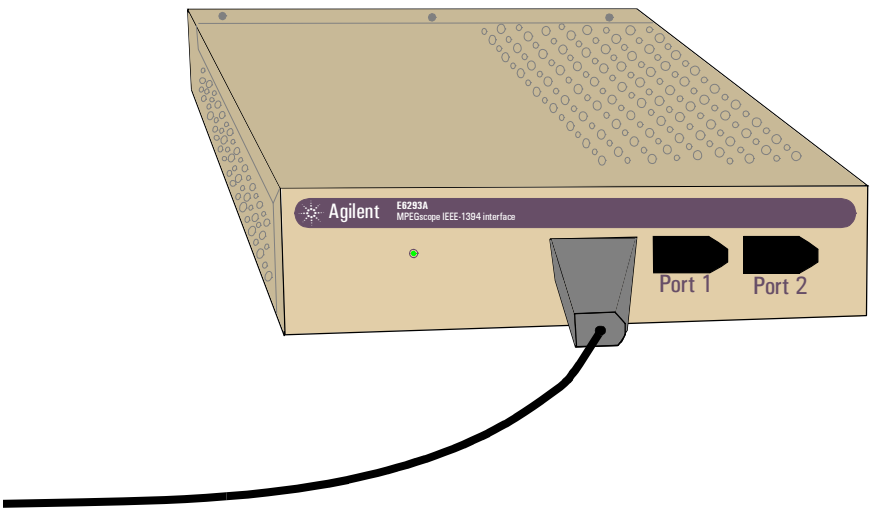
Connecting to MPEGscope Portable or Portable Lite—continued



Connect the other end of the serial RS 232 cable to the portable's Serial A or Serial B port.

Step 2: Connect the IEEE 1394 interface to the test device

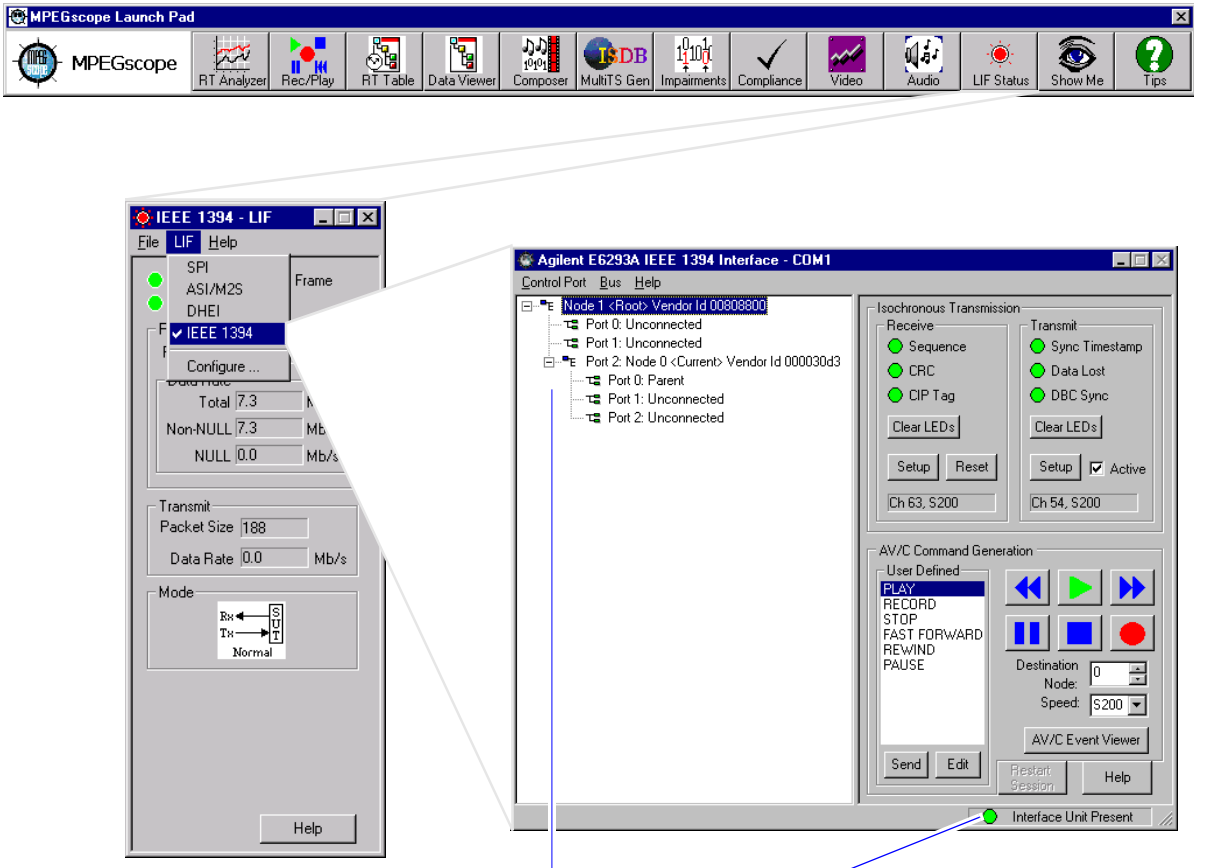
IEEE 1394 interface—front



Connect the other end of the IEEE 1394 cable to your test device.

The IEEE 1394 interface has three ports. You can connect test devices (for example, a digital VCR, digital set-top box, and protocol analyzer) to all three ports at once, or you can connect one device, then daisy chain the others.

Step 3: Launch the interface from MPEGscope

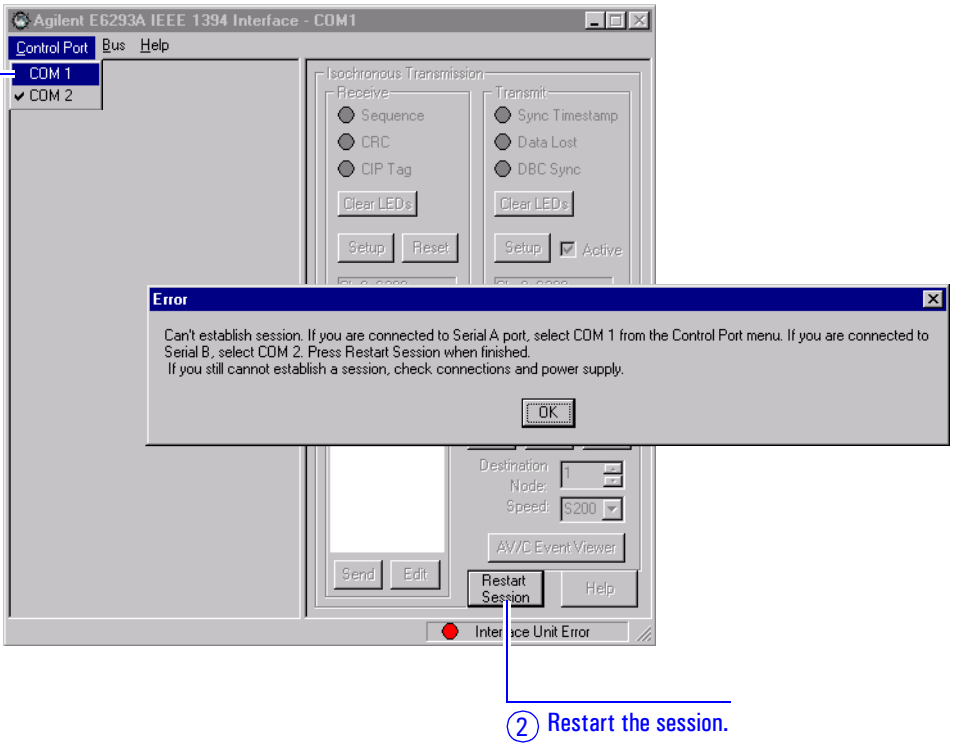


The tree structure displays the bus topology map, as defined in the IEEE 1394 standard. Nodes represent addressable devices, such as digital set-top boxes, digital VCRs, the IEEE 1394 interface, and MPEGscope. A single serial bus can have up to 63 nodes with each node containing one or more ports.

A green LED indicates that the IEEE 1394 interface is properly connected and functioning.

Troubleshooting

When you first launch the IEEE 1394 Interface application, the software attempts to establish a session with the hardware. If the wrong COM port is selected from the software, you will receive the following error message.



1. **Select the *other* port—i.e., the port not currently selected.**

   The software restores the configuration from the previous session. If you physically connect the interface to a different serial port than the one to which you connected during your previous session, you must reconfigure the software **COM** port when you restart the application.

2. **Restart the session.**

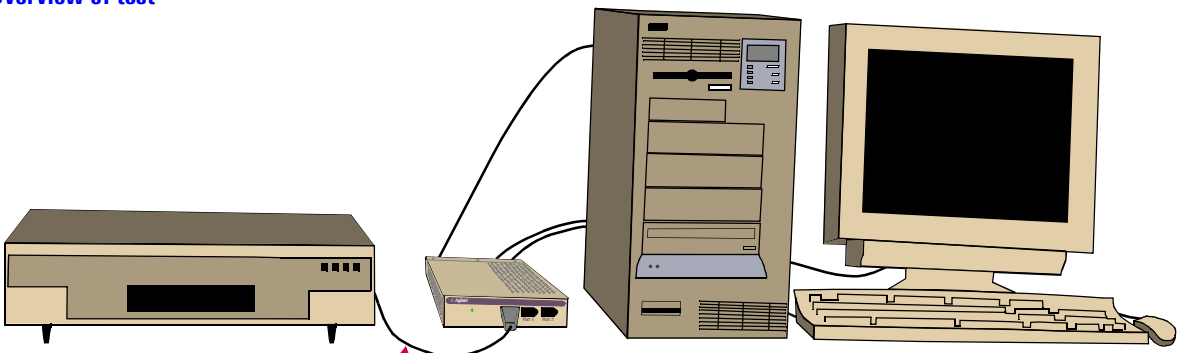
For more troubleshooting help, press the **Help** button on the main dialog then select **Troubleshooting**.

Sending a stream to MPEGscope

This tutorial shows how to send a transport stream from IEEE 1394 test equipment (such as a digital VCR) through the IEEE 1394 interface to the MPEGscope Test System, where you can then monitor, record, and analyze the stream.

Step 1: Play a stream to the IEEE 1394 interface

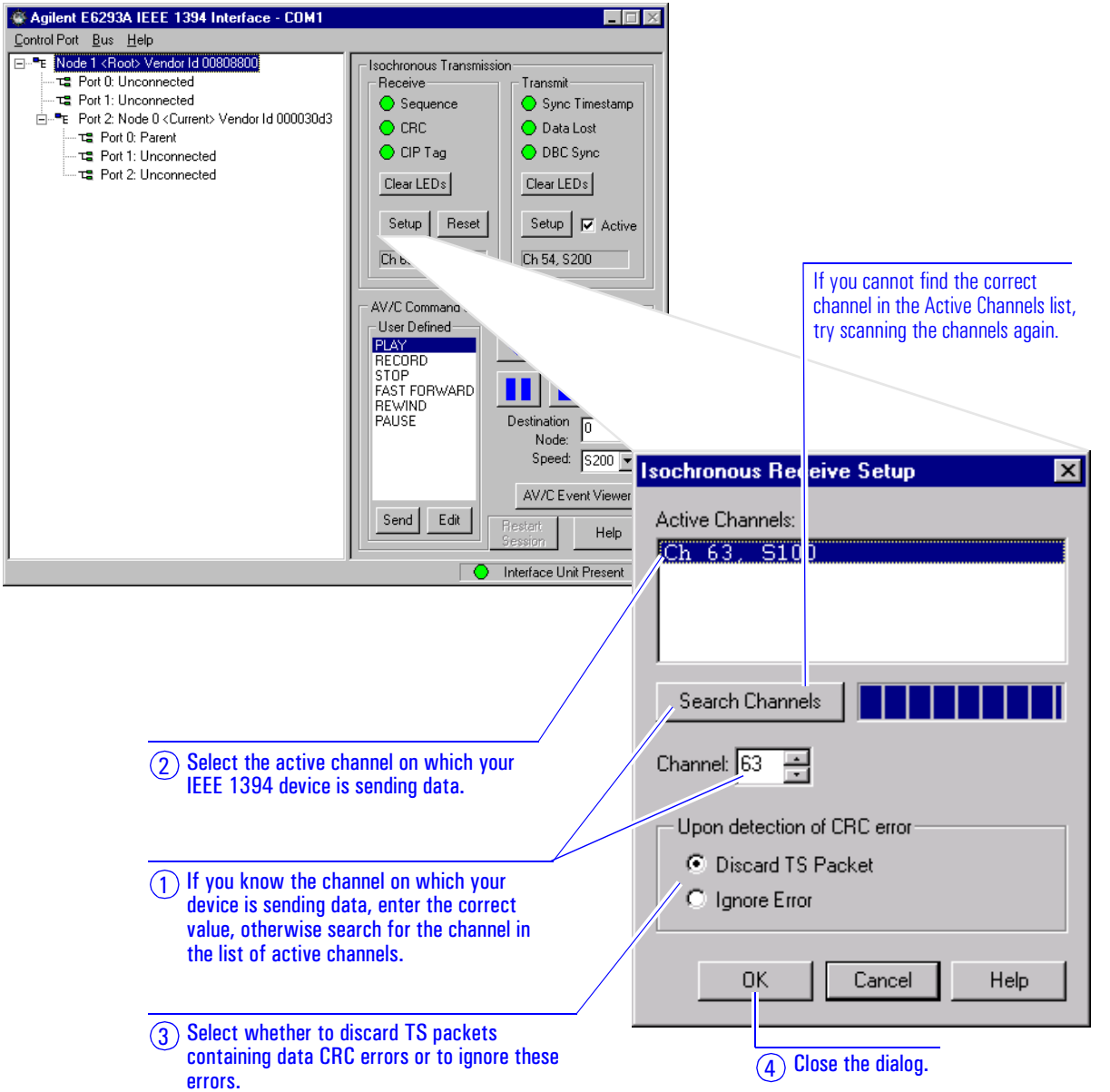
Overview of test



① Ensure all cables are correctly connected from the IEEE 1394 interface to MPEGscope and your test equipment, and that the IEEE 1394 interface application is launched from MPEGscope. For details, refer to "Setting up the IEEE 1394 interface" on pages 2-2 to 2-7.

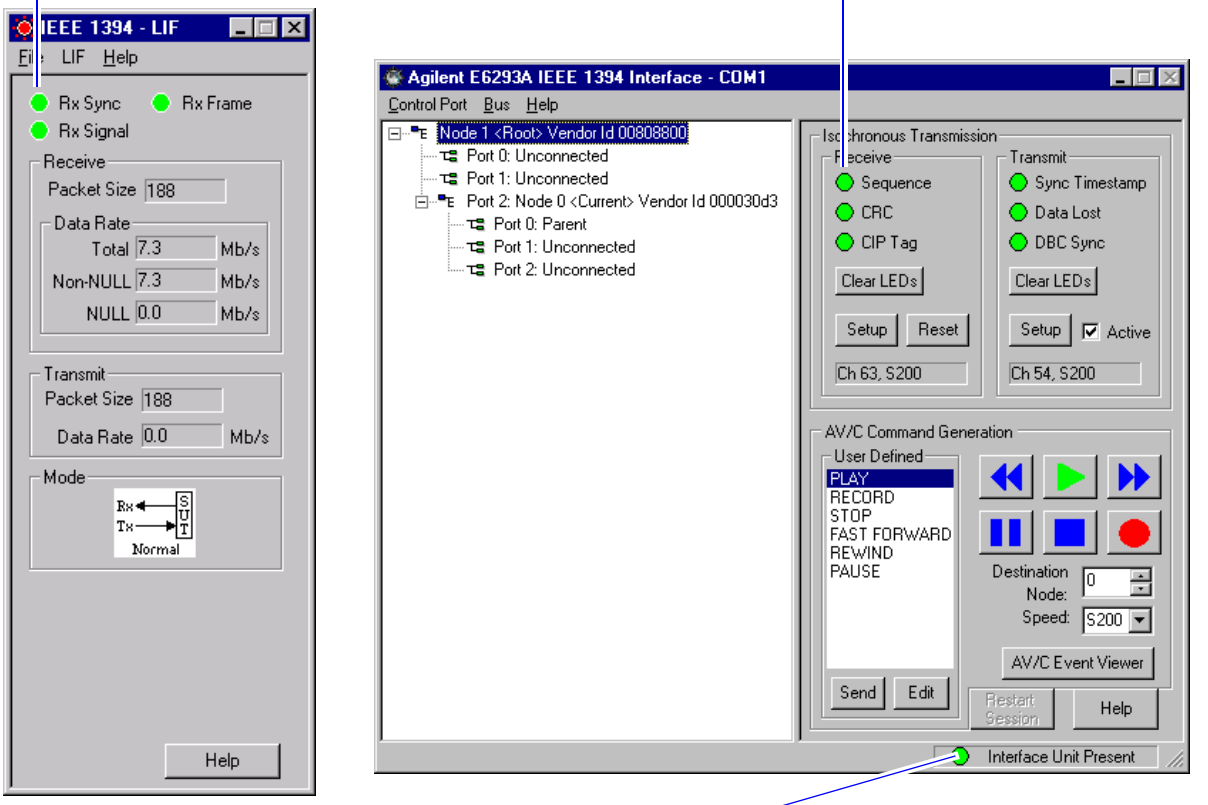
② Send a transport stream from your test equipment to the IEEE 1394 interface.

Step 2: Configure the IEEE 1394 receiver



These LEDs show the status of the stream at the MPEGscope ASI interface. Press the Help button at the bottom of the dialog for details.

A green LED indicates no errors. A red LED indicates that an error was detected. After two seconds it will change to a yellow LED, and will remain yellow until you select the Clear LEDs button.



A green LED indicates that the IEEE 1394 interface is properly connected and functioning.

Troubleshooting:

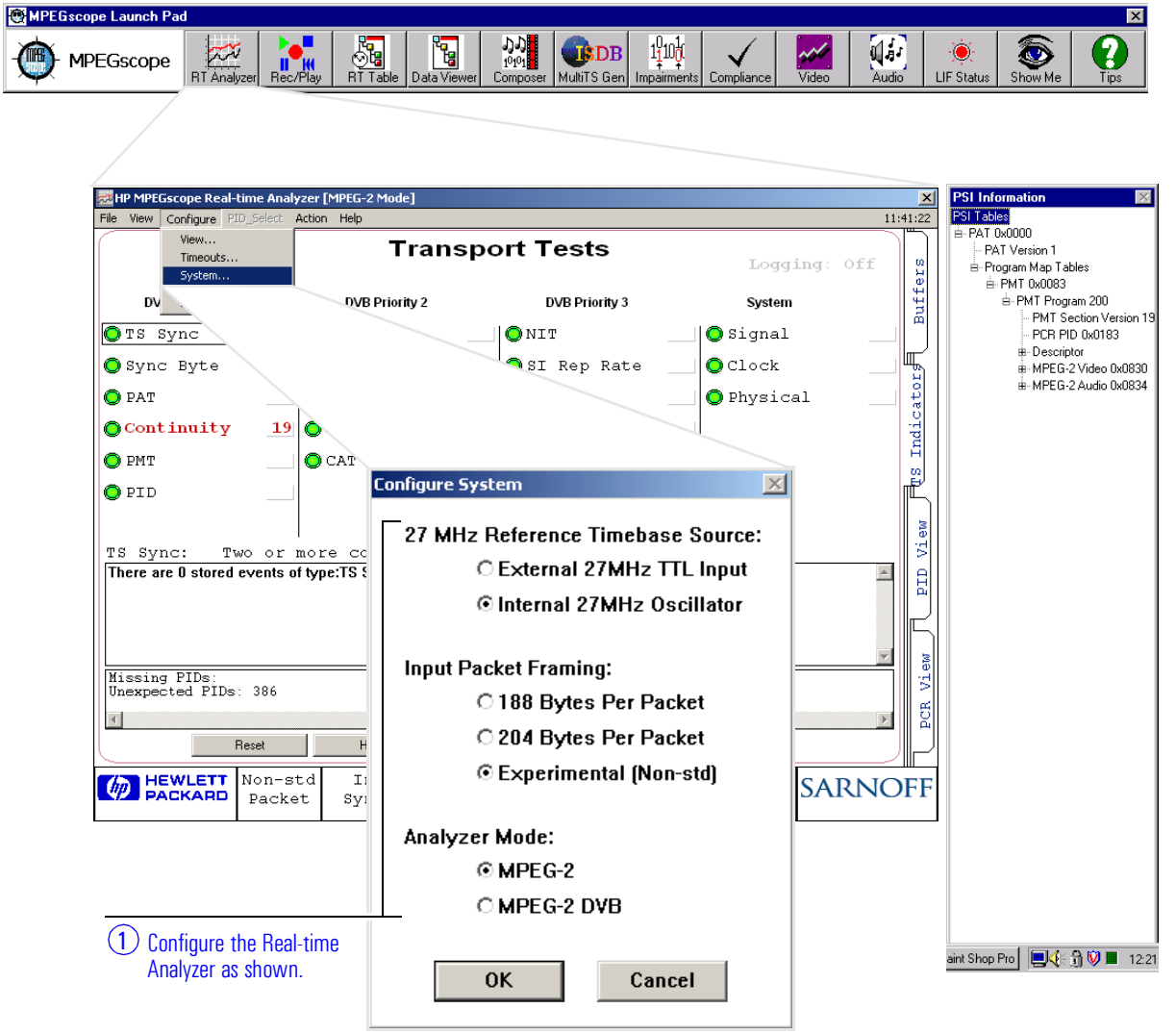
The IEEE 1394 Interface Troubleshooter can guide you through common problems and their solutions. Open the Troubleshooter as follows:

1 Select the Help button at the bottom of the main dialog.

2 Click Troubleshooting at the bottom of the help topic.

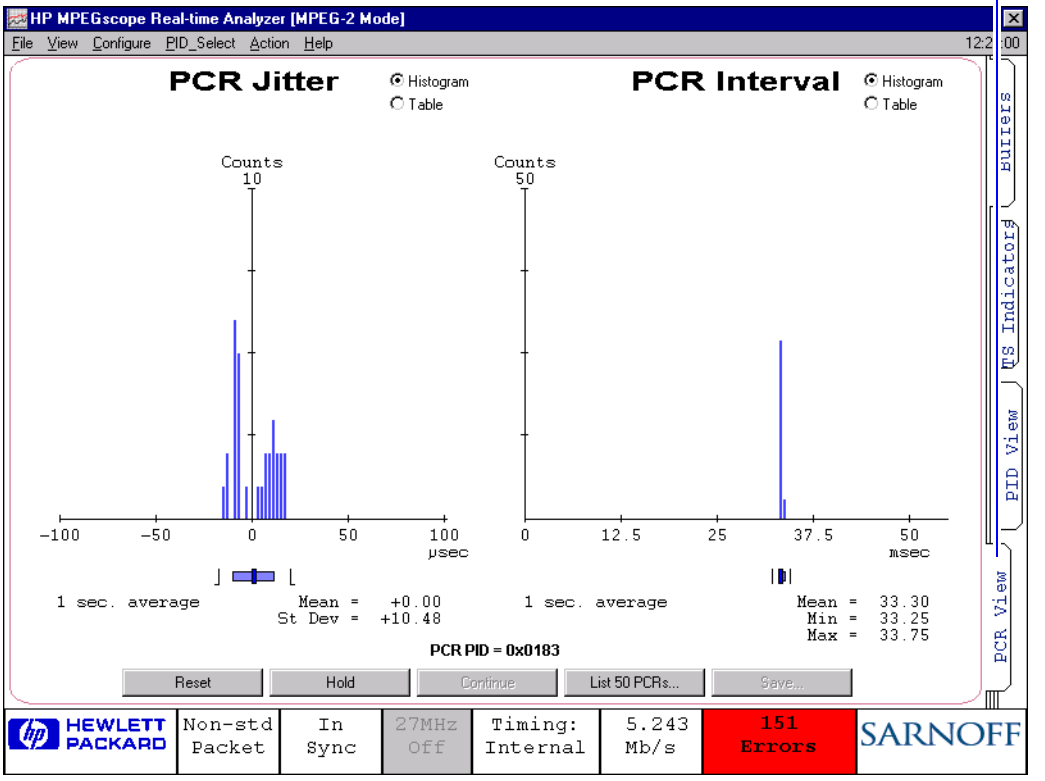
Step 3: (Optional) Monitor with the RT Analyzer

Complete this step if the IEEE 1394 interface status LEDs indicate errors and you want to monitor the stream from the Real-time Analyzer.



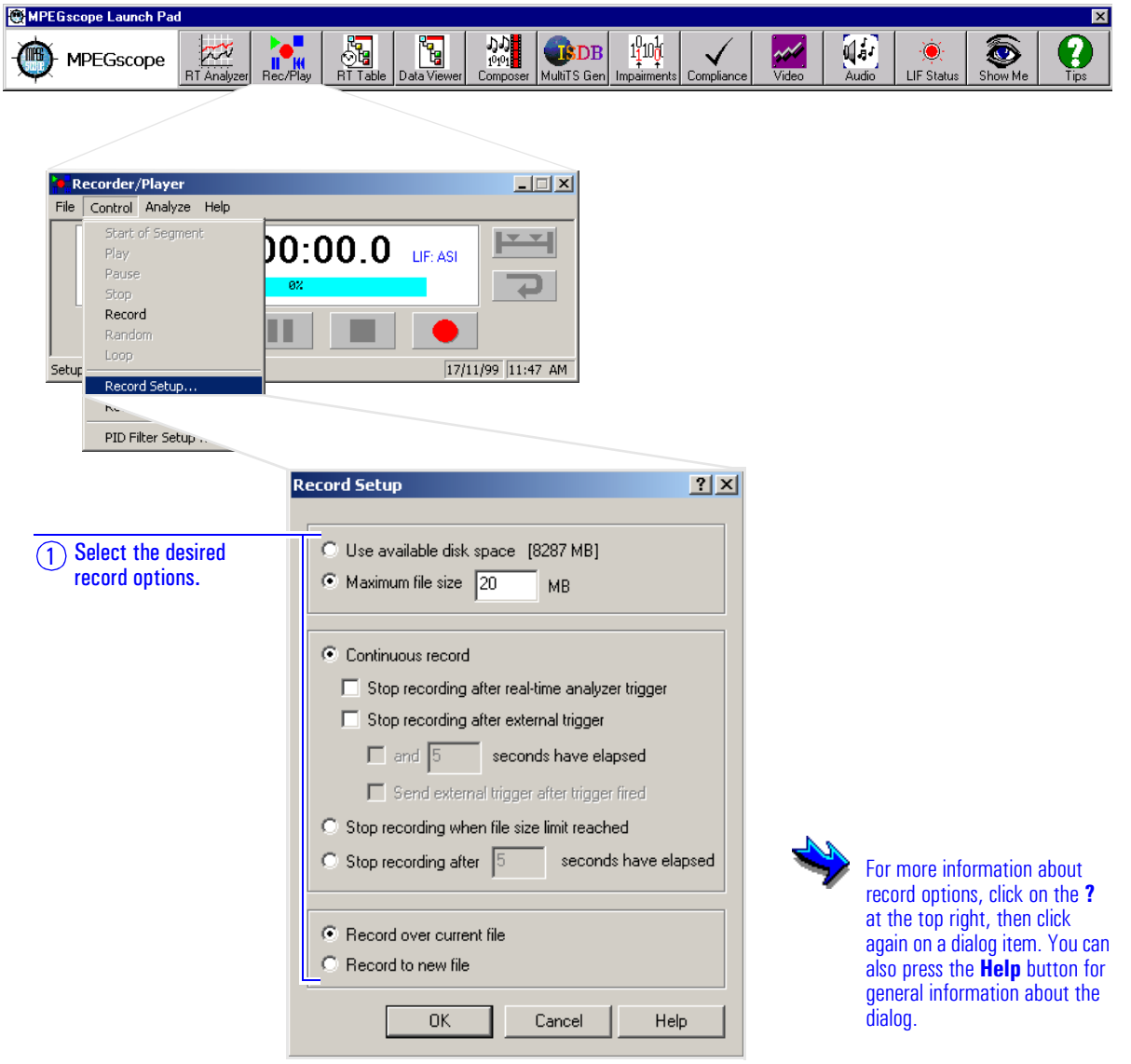
① Configure the Real-time Analyzer as shown.

② Select a tab to see the desired view.
The illustration below shows the **PCR View**.



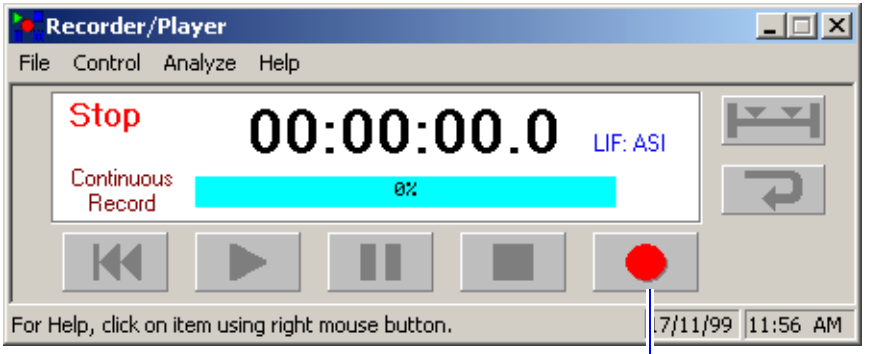
Step 4: Record with the Recorder/Player

Complete this step if you want to record the stream.



1. Select the desired record options.

For more information about record options, click on the **?** at the top right, then click again on a dialog item. You can also press the **Help** button for general information about the dialog.



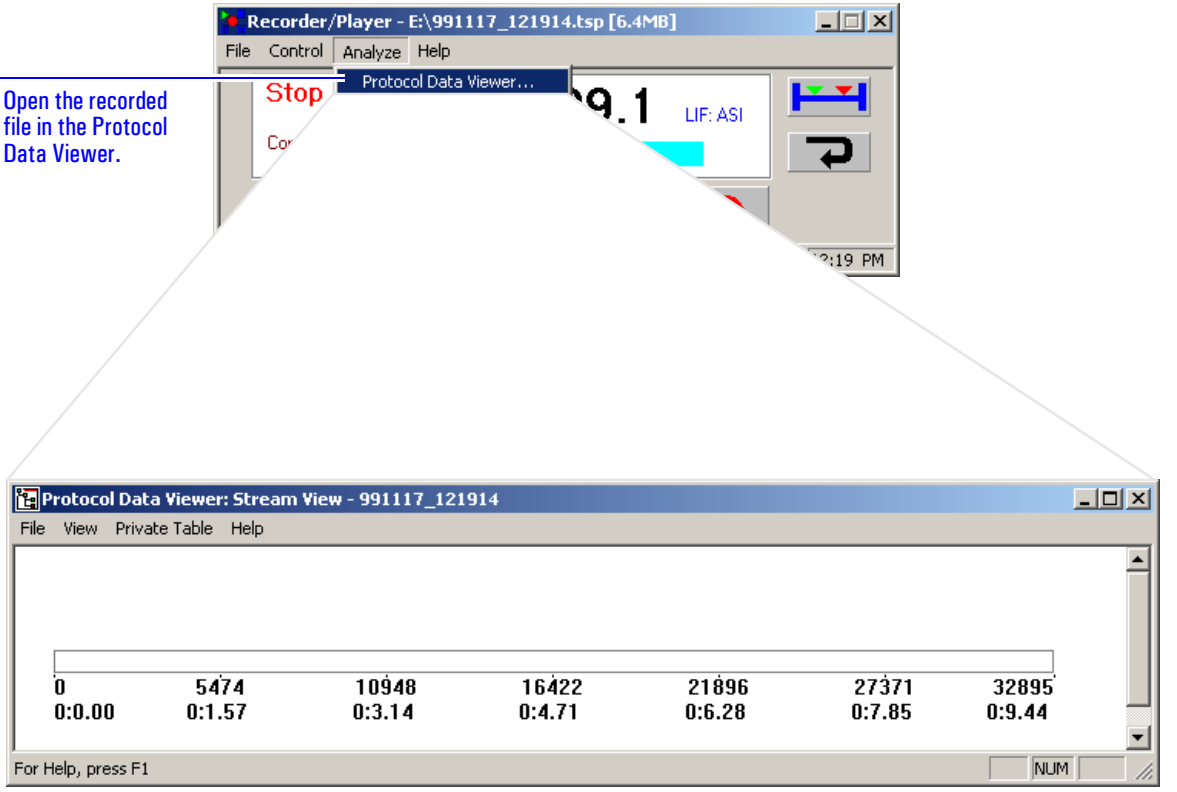
(2) **Start recording.**

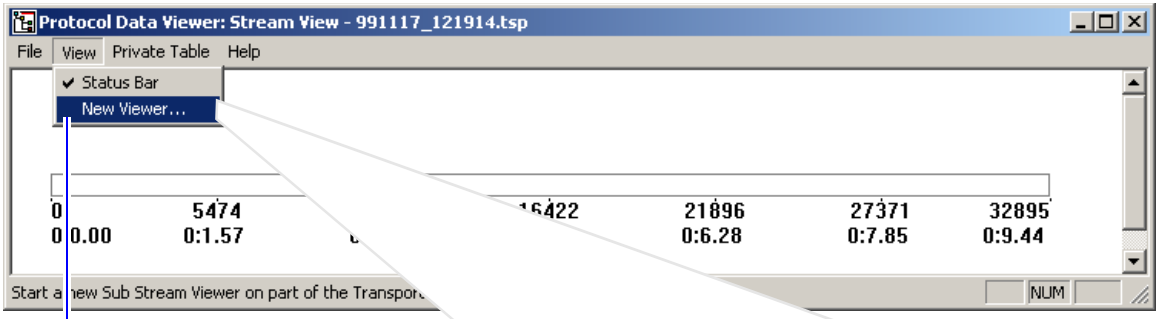
Depending on the options you selected at the **Record Setup** dialog, recording may stop automatically. Otherwise press the **Stop** button to stop recording.

Step 5: (Optional) Analyze file from the Data Viewer

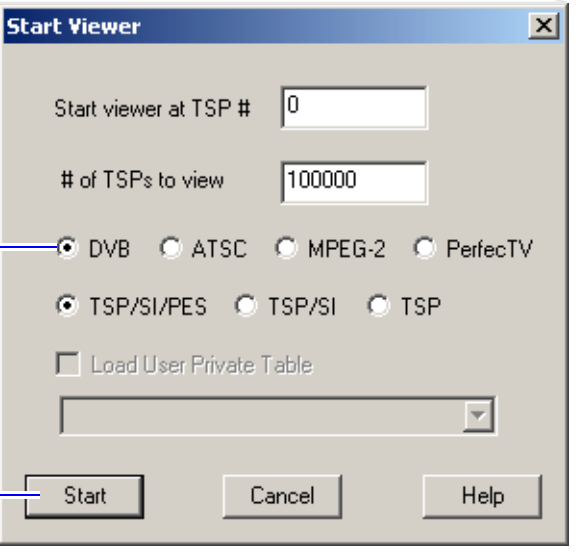
Complete this step if you want to analyze the recorded file in the Protocol Data Viewer.

① Open the recorded file in the Protocol Data Viewer.





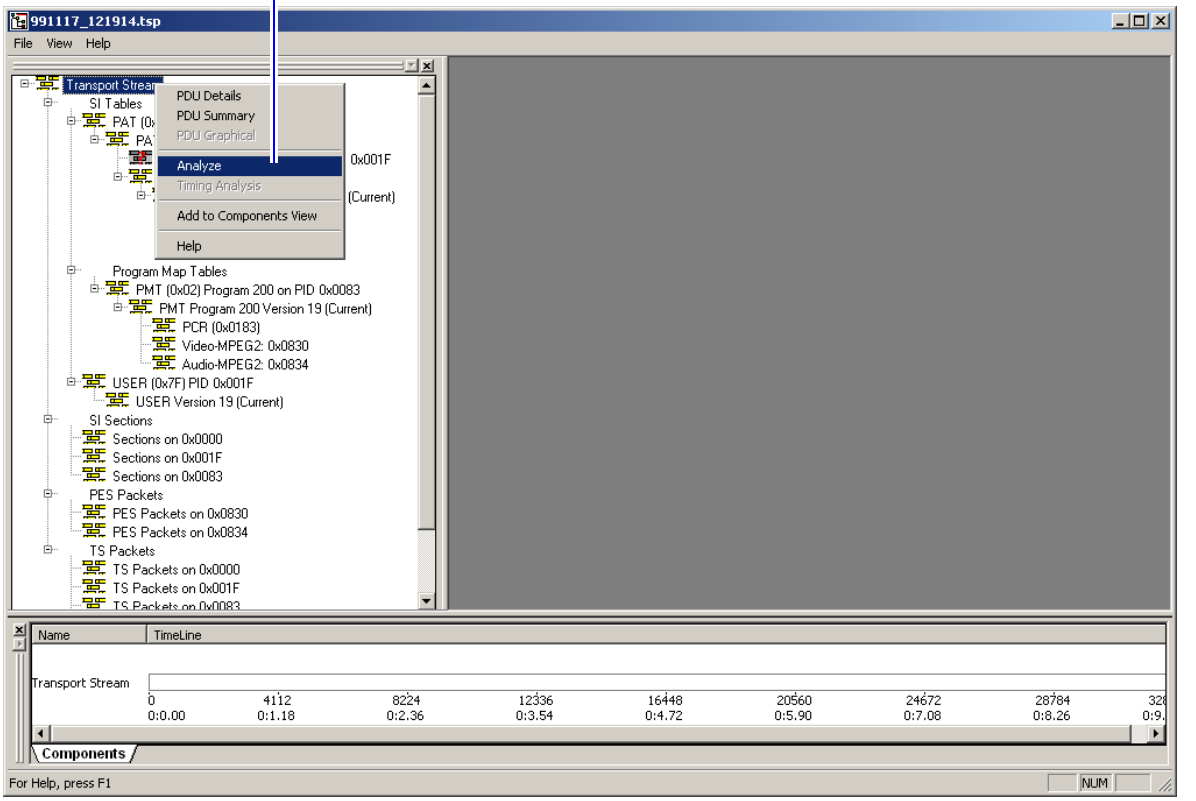
② Start a new viewer.



③ Select DVB option for "partial transport stream" decode (includes SIT, DIT, and descriptors).

④ Press **Start** to open a substream view.

5 Use the right mouse button to open the shortcut menu at any level in the tree hierarchy, then select the desired operation.



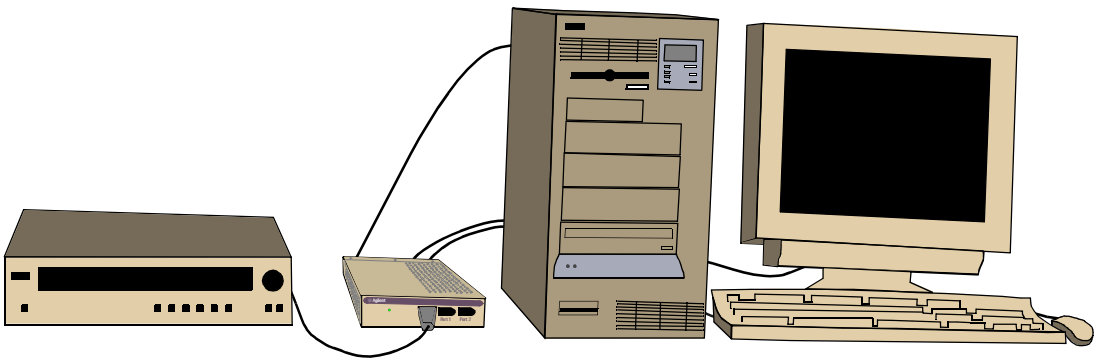
For more information about how to use the Protocol Data Viewer, MPEGscope offers a number of learning products:

- *Training Cards*: Click on the **Show Me** button from the MPEGscope Launch Pad, then select the **test with the Protocol Data Viewer** option.
- *Online Help*: Click the **Tips** button from the MPEGscope Launch Pad. From the **Help Topics Contents** dialog, double click on **Analyzing with the Protocol Data Viewer**, then select the online help topics you are interested in.
- *PDF Tutorial*: Click the **Tips** button from the MPEGscope Launch Pad. From the **Help Topics Contents** dialog, double click on **Online Manuals**, then select **MPEGscope User's Guide**. Chapter 6, "Using the Protocol Data Viewer", is a step-by-step tutorial that illustrates

Transmitting a Stream from MPEGscope

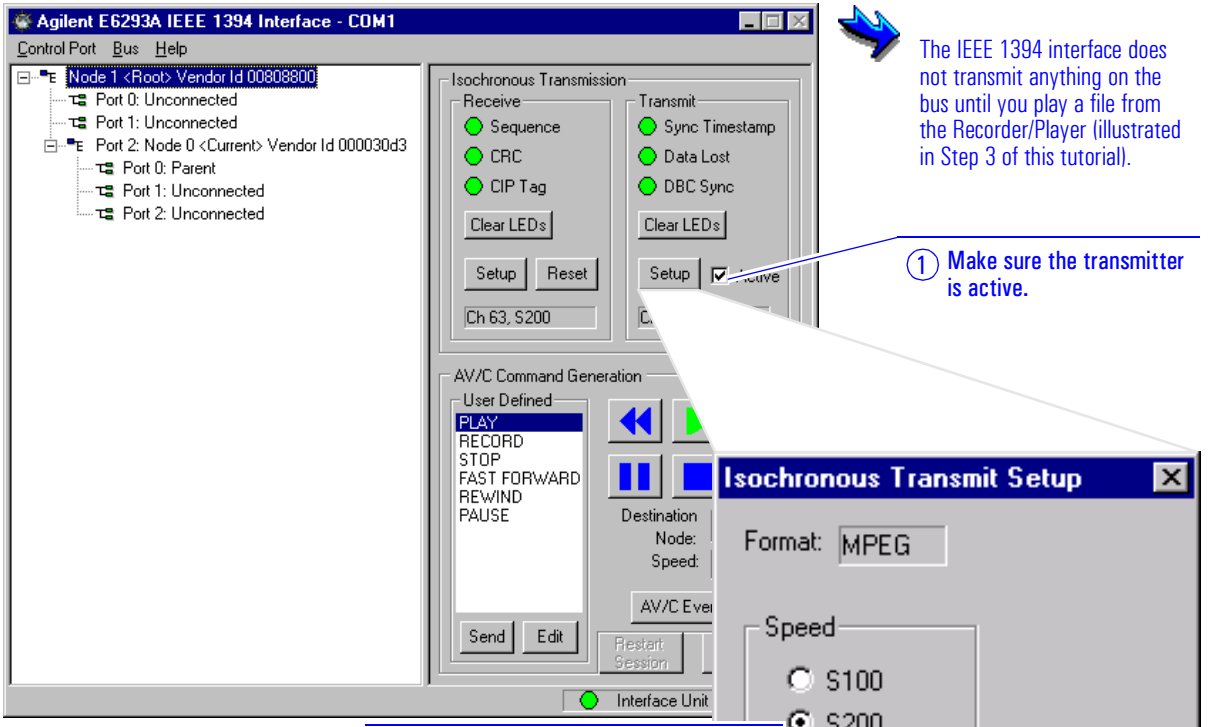
This tutorial shows how to send a stream from MPEGscope through the IEEE 1394 interface to IEEE 1394 test equipment, such as a digital set-top box.

Overview of test



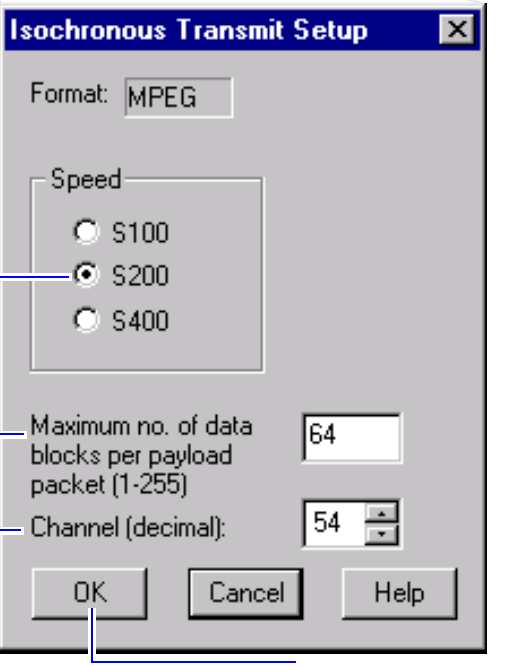
Ensure all cables are correctly connected from the IEEE 1394 interface to MPEGscope and your test equipment, and that the IEEE 1394 interface application is launched from MPEGscope. For details, refer to "Setting up the IEEE 1394 interface" on pages 2-2 to 2-7

Step 1: Configure the IEEE 1394 transmitter



The IEEE 1394 interface does not transmit anything on the bus until you play a file from the Recorder/Player (illustrated in Step 3 of this tutorial).

1. Make sure the transmitter is active.



2. Select the transmit rate.
   S100 = 98.304 Mb/s
   S200 = 196.608 Mb/s
   S400 = 393.216 Mb/s

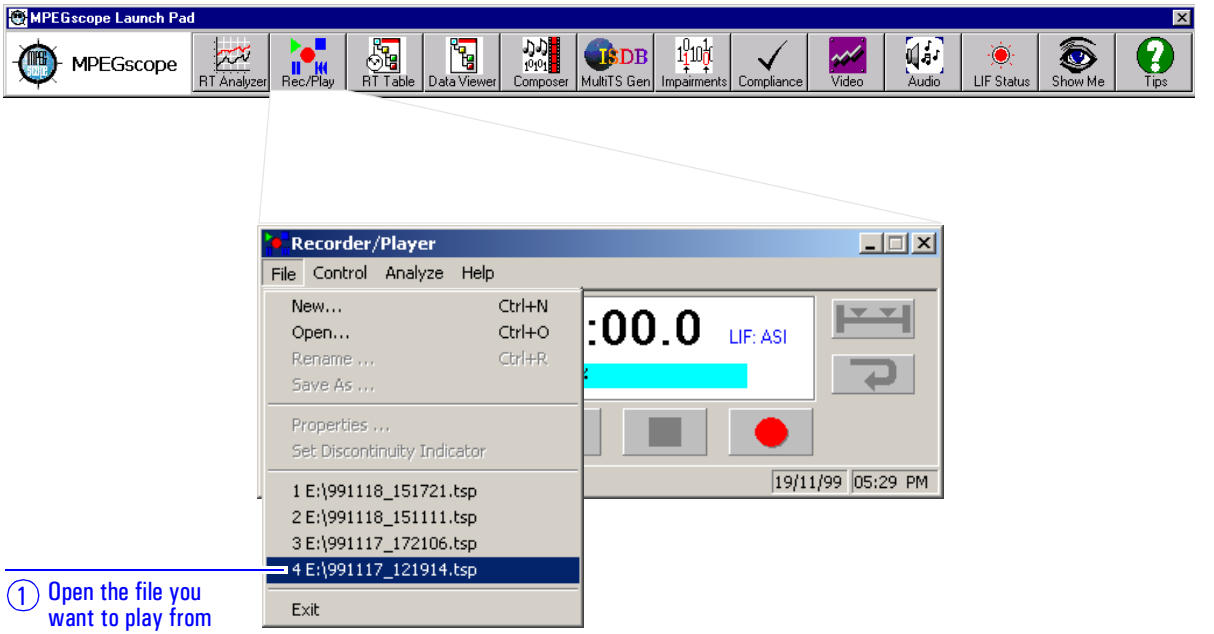
3. Enter the number of data blocks to insert in the payload packet.

4. Enter a channel on which to transmit.

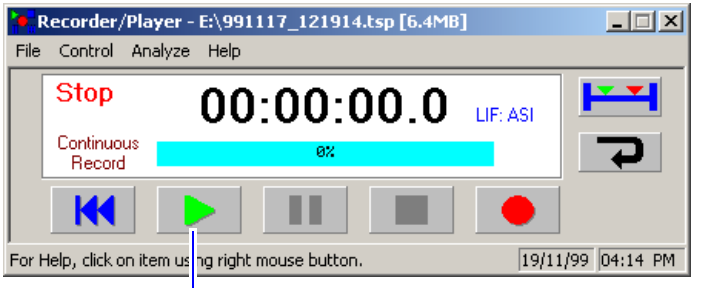
5. Close the dialog.

The transmitter and receiver must use separate channels. To locate a channel that the receiver is not using, open the **Isochronous Receive Setup** dialog and search through the active channels, as illustrated on page 2-10.

Step 2: Play a file from MPEGscope



1 Open the file you want to play from the Recorder/Player.



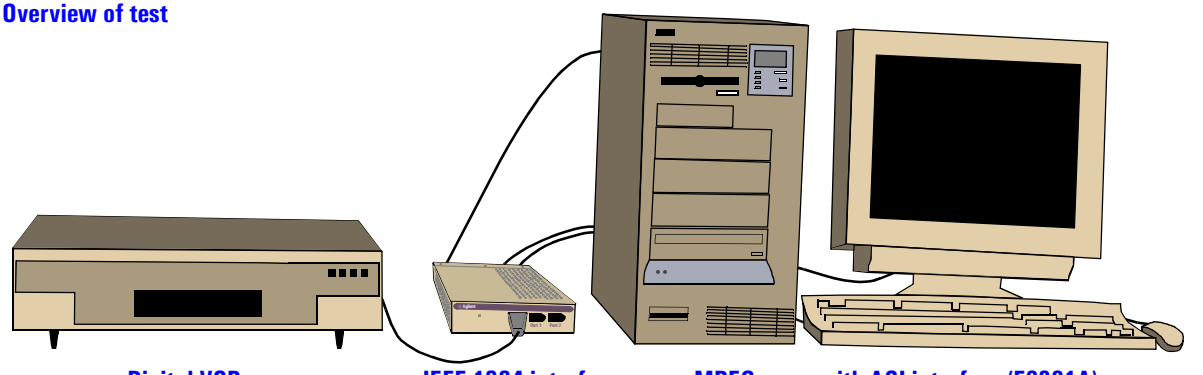
2 Play the file.

Sending AV/C Commands

This tutorial shows how to send AV/C (Audio/Video Control) commands from the IEEE 1394 interface to IEEE 1394 test equipment, such as a digital VCR. You can use predefined AV/C commands or define your own. The tutorial also shows how to view commands and responses from the AV/C Event Viewer.

For more information on AV/C frames, refer to the standards on page A-2.

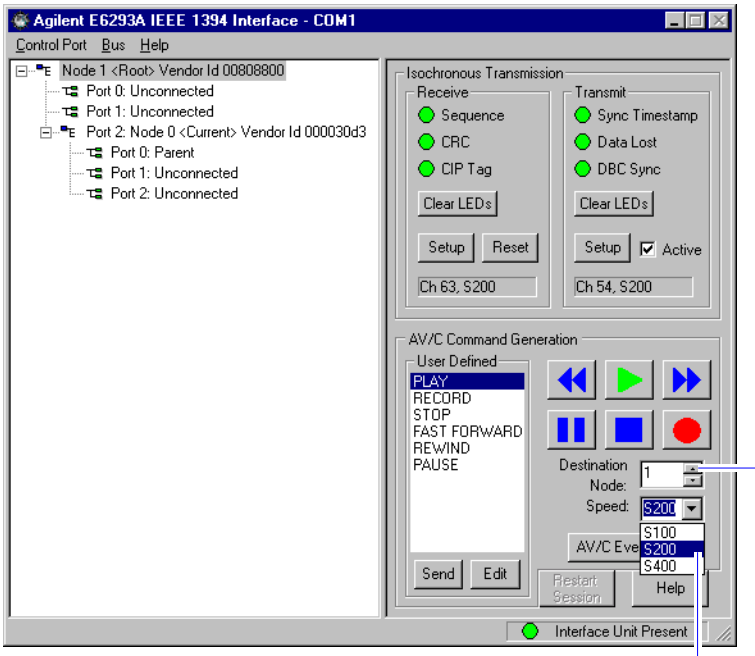
Overview of test



Digital VCR **IEEE 1394 interface** **MPEGscope with ASI interface (E6291A)**

Ensure all cables are correctly connected from the IEEE 1394 interface to MPEGscope and your test equipment, and that the IEEE 1394 interface application is launched from MPEGscope. For details, refer to "Setting up the IEEE 1394 interface" on pages 2-2 to 2-7

Step 1: Select the node and transmit speed



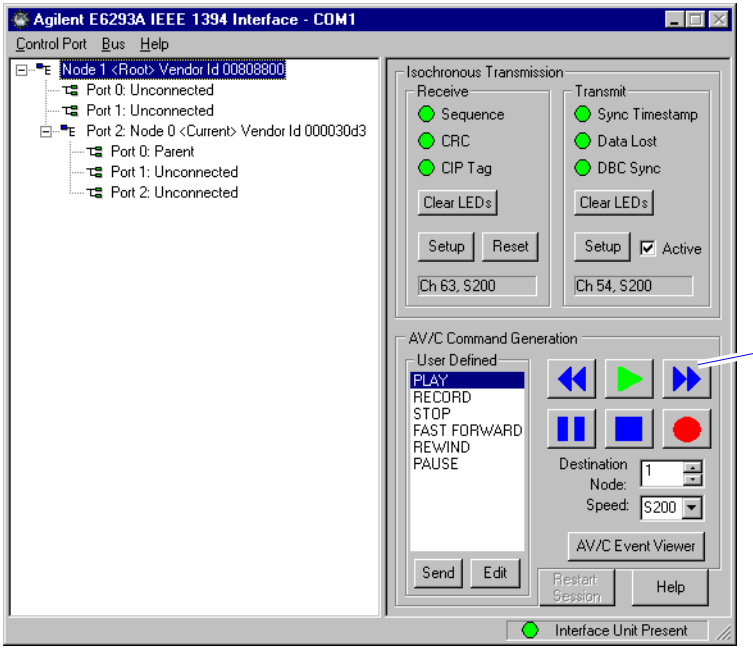
1. Enter the node number of the device to which the command will be sent.

2. **Select the speed at which to transmit commands to the selected node.**

   S100 = 98.304 Mb/s
   S200 = 196.608 Mb/s
   S400 = 393.216 Mb/s

The bus topology map displays the node numbers of all attached devices. The **Current Node** is always the IEEE 1394 interface. If you have more than one device connected, you can tell them apart by the Vendor ID which is displayed to the right of the node number.

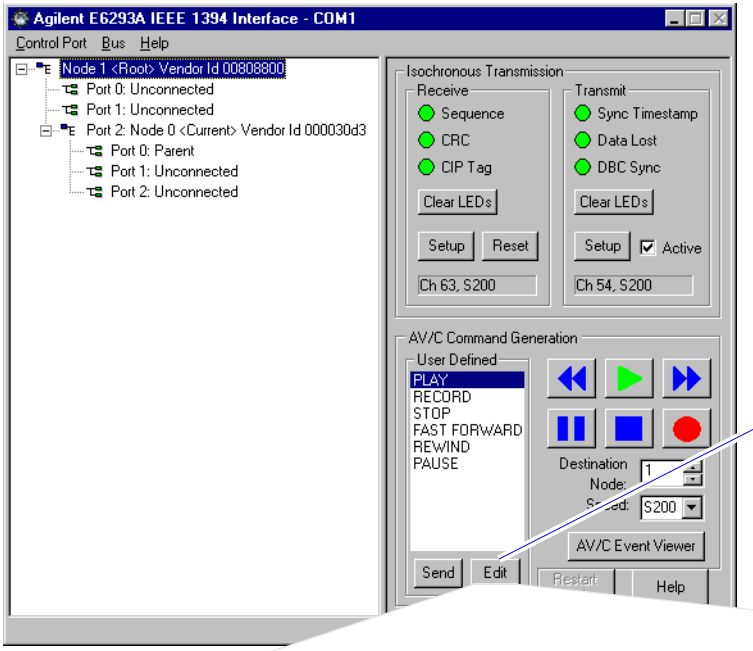
Step 2: Send commands to test equipment



To send a default command, click one of the predefined buttons.

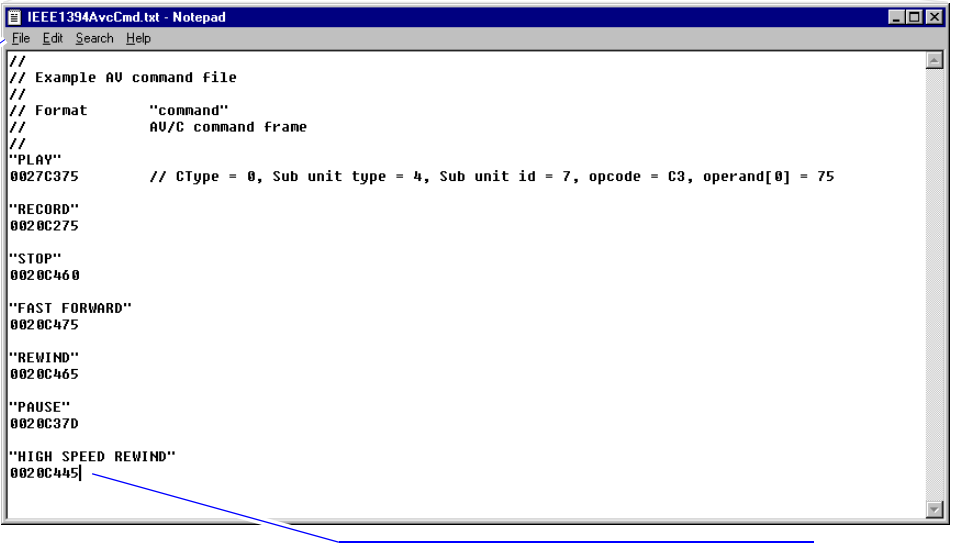
Default AV/C commands are described below.

Default AV/C Commands	ctype (4 bits)	subunit_type (5 bits)	subunit_ID (3 bits)	opcode (8 bits)	operand (8 bits)
		[Together these two fields define the AV/C address.]			
Wind Rewind	0x00	0x20		0xC4	0x65
Play Forward	0x00	0x20		0xC3	0x75
Wind Fast Forward	0x00	0x20		0xC4	0x75
Play Forward Pause	0x00	0x20		0xC3	0x7D
Wind Stop	0x00	0x20		0xC4	0x60
Record Overwrite All	0x00	0x20		0xC2	0x75



1 To define and send your own AV/C command, first open the AV/C command definitions file "IEEE1394AvcCmd.txt".

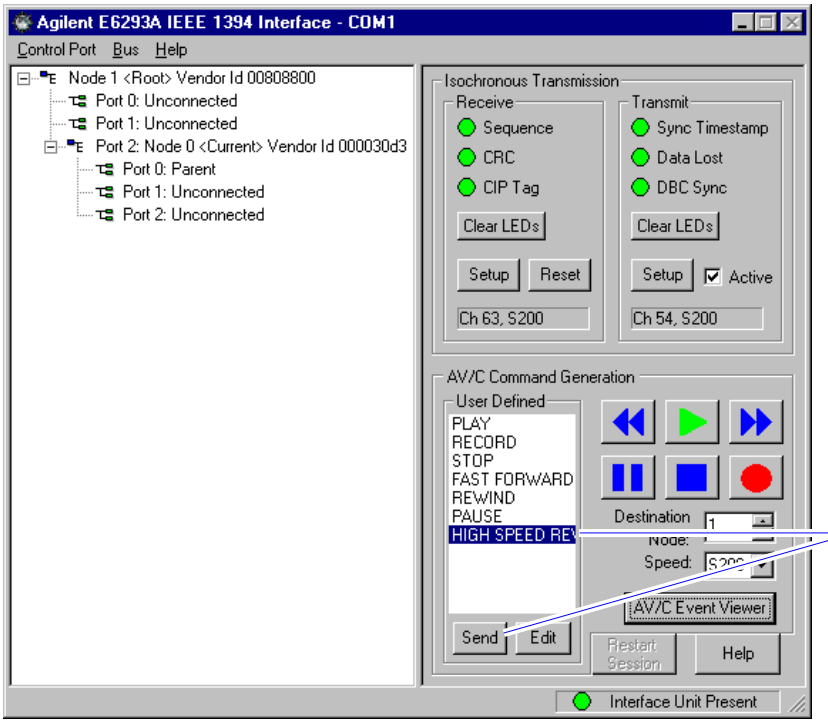
This file is shipped with the IEEE 1394 application on E: drive, and contains the six default AV/C commands.



2 Add more AV/C commands, as desired, following the syntax outlined at the top of the file.

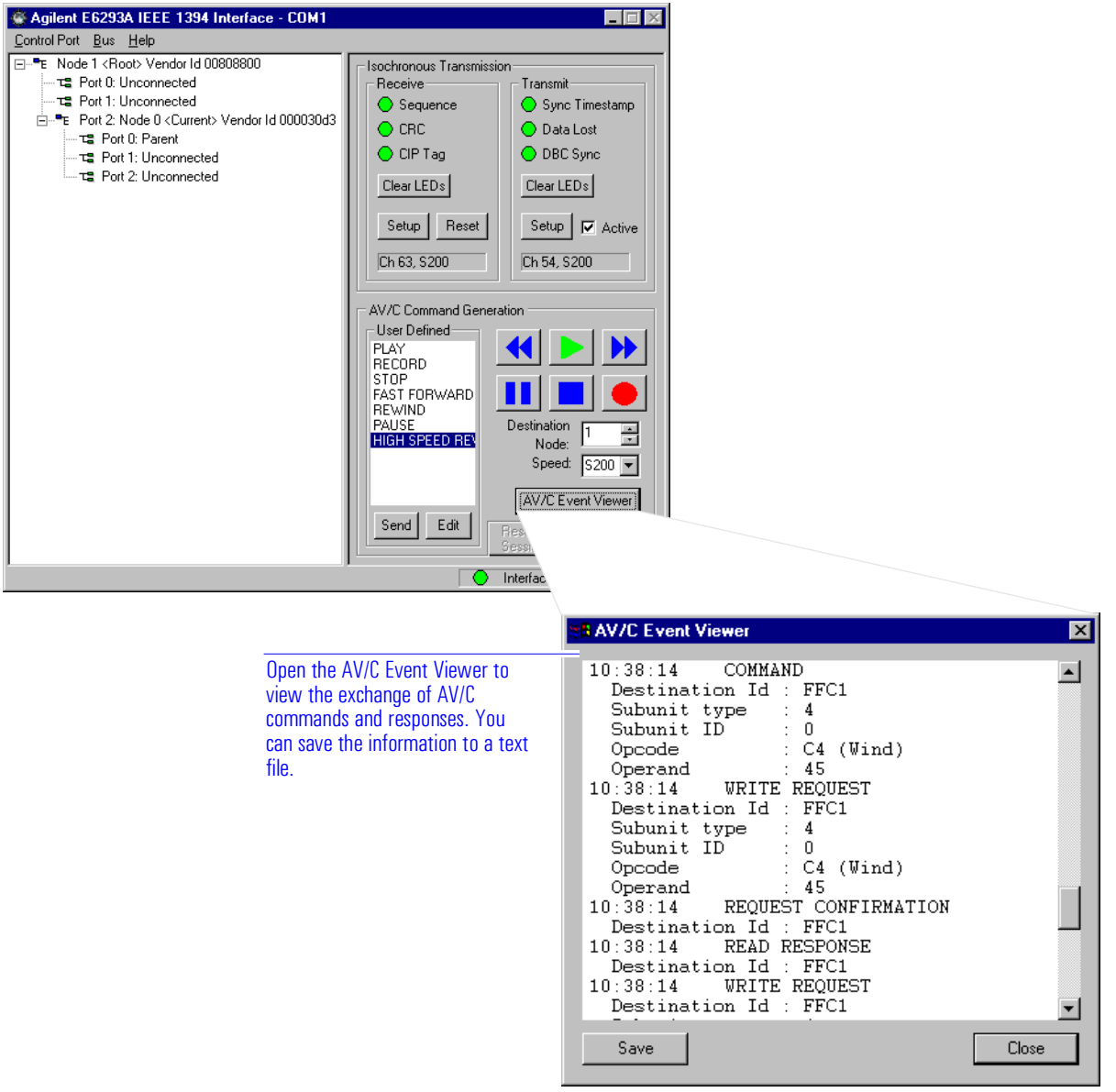
Commands added to this file will display in the **User Defined** list.

3 When you are finished editing, save and close the text file.



② Highlight the desired command, then press Send.

Step 3: View commands from the AV/C Event Viewer



Open the AV/C Event Viewer to view the exchange of AV/C commands and responses. You can save the information to a text file.

A

Specifications

Specifications

Standards

Portions of the following standards are relevant to the IEEE 1394 interface. You should be familiar with these standards before using this guide.

IEEE 1394 interface standards

- IEEE Std 1394-1995: *IEEE Standard for a High Performance Serial Bus*, IEEE Computer Society, 12 December 1995
- IEEE Std. 1394a-2000: *IEEE Standard for a High Performance Serial Bus*, IEEE Computer Society, 2000
- ISO/IEC 61883-1 1998-02: *Consumer audio/video equipment—Digital interface—Part 1: General*, First edition
- ISO/IEC 61883-4 1998-02: *Consumer audio/video equipment—Digital interface—Part 4: MPEG-2 TS data transmission*, International Electrotechnical Commission, First edition
- *AV/C Digital Interface Command Set General Specification*, 1394 Trade Association, Version 3.0, April 15, 1998
- *Enhancements to the AV/C General Specification 3.0*, 1394 Trade Association, Version 1.0, January 26, 1998
- *AV/C Digital Interface Command Set VCR Subunit Specification*, 1394 Trade Association, Version 2.0.1, January 5, 1998
- *AV/C Tuner Model and Command Set*, 1394 Trade Association, Version 1.0, April 15, 1998
- *AV/C Tuner Broadcast System Specification—Digital Video Broadcast (DVB)*, 1394 Trade Association, Version 1.0, April 15, 1998
- EIA-775: *DTV 1394 Interface Specification*, Electronic Industries Alliance, December, 1998

Technical Specifications

General	IEEE 1394 bus speed:	S100 (98.304 Mb/s), S200 (196.608 Mb/s), S400 (393.216 Mb/s)
	Number of IEEE 1394 ports:	3
	IEEE 1394 power class:	0
	Max MPEGscope TS capture/playout rate:	94 Mb/s
	Min MPEGscope TS capture/playout rate:	250 Kb/s
Error Indicators	Rx Sequence Error	Tx Sync Timestamp Error
	Rx CRC Error	Tx Data Lost Error
	Rx CIP Header Tag Fault	Tx DBC Sync Fault
AV/C Command Generation	User-definable command environment, including EIA-775 support.	
	Predefined digital VCR subunit AV/C commands accessed directly from GUI, including:	
	Play Forward (C375)	Wind Stop (C460)
	Play Forward Pause (C37D)	Record Overwrite All (C275)
	Wind Fast Forward (C475)	Wind Rewind (C465)
	Logging of transmitted and received AV/C commands.	
Other	Partial transport stream decoding and generation, including DIT and SIT tables and descriptors.	
Standards	PHY and LINK:	IEEE 1394a-2000
	MPEG-2 TS Data Transmission:	ISO/IEC 61883-4
	AV/C Command Set:	1394TA D-VCR Subunit, Tuner Model, and Tuner Broadcast System, EIA-775
	Partial Transport Stream	ETS 300 468
Electrical	Voltage:	100-240 VAC
	Frequency:	47-63 Hz
	Power:	4.5 W
Physical	Dimensions (l *x* w *x* h):	15.7 *x* 15.7 *x* 3.2 cm
	Weight:	0.7 kg
Regulatory & Safety	Radiated emissions:	EN 55011:1991 / CISPR 11:1992 + A2:1996
	Conducted emissions:	EN 55011:1991 / CISPR 11:1992 + A2:1996
	Immunity compliance:	EN 61000-3-3:1994 / IEC 1000-3-3:1994
	ESD:	EN 61000-4-2:1995 / IEC 1000-4-2:1995

B

Release Notes

Release Notes

This section describes known problems with the IEEE 1394 interface.

Initial startup

Application may have startup problems if many devices attached

If you have connected more than three devices, the IEEE 1394 interface application may be slow to react when first launched and the bus topology map may be unstable or incorrect. The problem is caused by repeated bus resets as the devices attempt to establish their positions. You may also receive a restart session message.

The solution is to disconnect all IEEE 1394 interface cables from the interface. If you have received a restart session message, restart the session after disconnecting the cables by pressing the **Restart Session** button at the bottom of the **IEEE 1394 Interface** application's main dialog.

When the bus topology map on the user interface displays the three ports as "**Unconnected**" *and* the indicator status LED at the bottom right of the main dialog is green, you can reconnect the cables. The system will stabilize and behave normally.

High bit rate files

Interface cannot handle data rates of 50 Mb/s or greater

The IEEE 1394 interface cannot receive or transmit if the data rate is 50 Mb/s or greater. Currently no workaround exists. [E6293A.11]

Problems receiving after sending high bit rate stream

Sending a high bit rate stream (50 Mb/s or greater) may put the receiver in an unstable state where it cannot receive data at *any* bit rate. The **Rx Sync** LED on the **IEEE 1394 - LIF** application will remain red if this occurs.

The solution is to change the transmission channel from the transmitting equipment, then resend the data. If the **Rx Sync** LED is still red, disconnect the DC power connector at the back of the interface for a few seconds, then reconnect it. (If you receive a restart session message, press the **Restart Session** button at the bottom of the **IEEE 1394 Interface** application's main dialog after you have reconnected the power supply.) Resend the stream. [E6293A.29]

Playing—truncation

When transmitting, up to 127 packets may be lost at end of file

The IEEE 1394 interface connects to MPEGscope through its ASI interface. All MPEGscope interfaces transmit data in multiples of 128 packets, ignoring any packets that remain at the end of the file. You can therefore lose up to 127 packets when transmitting. Currently no workaround exists. [E6277A_001.118], [E6277A.400], [E6277A.422], [E6277A.468], [E6293A.13]