



ARIB Interface Installation Guide

Product Number: E6289A

Document Part Number: E6289-94000 Ed2

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MPEGscope

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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. A new edition may not be issued with every application release. The application release, at the date of printing, is noted in the following table.

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Product Number: E6289A

Printing Date	Manual Part Number
September, 1998	E6289-92008 Ed1
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Product support

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Victoria, Australia Web: <http://advanced.comms.agilent.com/mpegscope>

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.

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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.

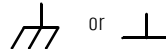
Safety Symbols



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 industriellen, 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.

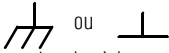
Symboles de sécurité



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.



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 industriellen, 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 dommages à l'équipement ou la perte permanente de données.

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Introduction

The E6289A ARIB (Association of Radio Industries and Businesses) interface is an 8-bit parallel TTL card that receives an ARIB-compliant signal and converts it to a DVB-Synchronous Parallel Interface (DVB-SPI) signal. This DVB-SPI signal is then output to the DVB-SPI receiver on the MPEGscope main card via an external cable which is included with your installation kit. The ARIB interface enables you to receive transport streams from an ARIB device and analyze them with the MPEGscope digital video test system.

This manual shows how to install the ARIB interface card into your MPEGscope Plus, MPEGscope Lite, MPEGscope Portable, or MPEGscope Portable Lite test system. Each step provides photographs and easy-to-understand explanations. The manual also includes illustrations and physical specifications for the interface and connectors.

Installation kit

Before beginning, ensure that your ARIB interface installation kit contains the following items:

- ARIB Installation Guide (E6289-92008J)
- ARIB Line Interface Assembly (E6289-66502)
- ARIB Interface Cable (E6289-61601)
- ARIB-to-DVB-SPI Adapter Cable (E6289-61602)
- Size 15 Torx Head Screwdriver (8710-1622)
- Antistatic Wrist Strap (9300-1408)

Introduction

For more help...

If you have any questions about the installation procedure, call your local HP representative. You can also contact digital video customer support at the following numbers:

Location	Number
North, Central, South America	1 800 698 0061 <i>or</i> (719) 531 4589
Asia-Pacific	1 800 375 8100 <i>or</i> (65) 272 5293
Europe, Africa, Middle East	+31 20 547 9900 <i>or</i> +33 69 29 41 14
Japan	0120 421 345 <i>or</i> +81 426 56 7799

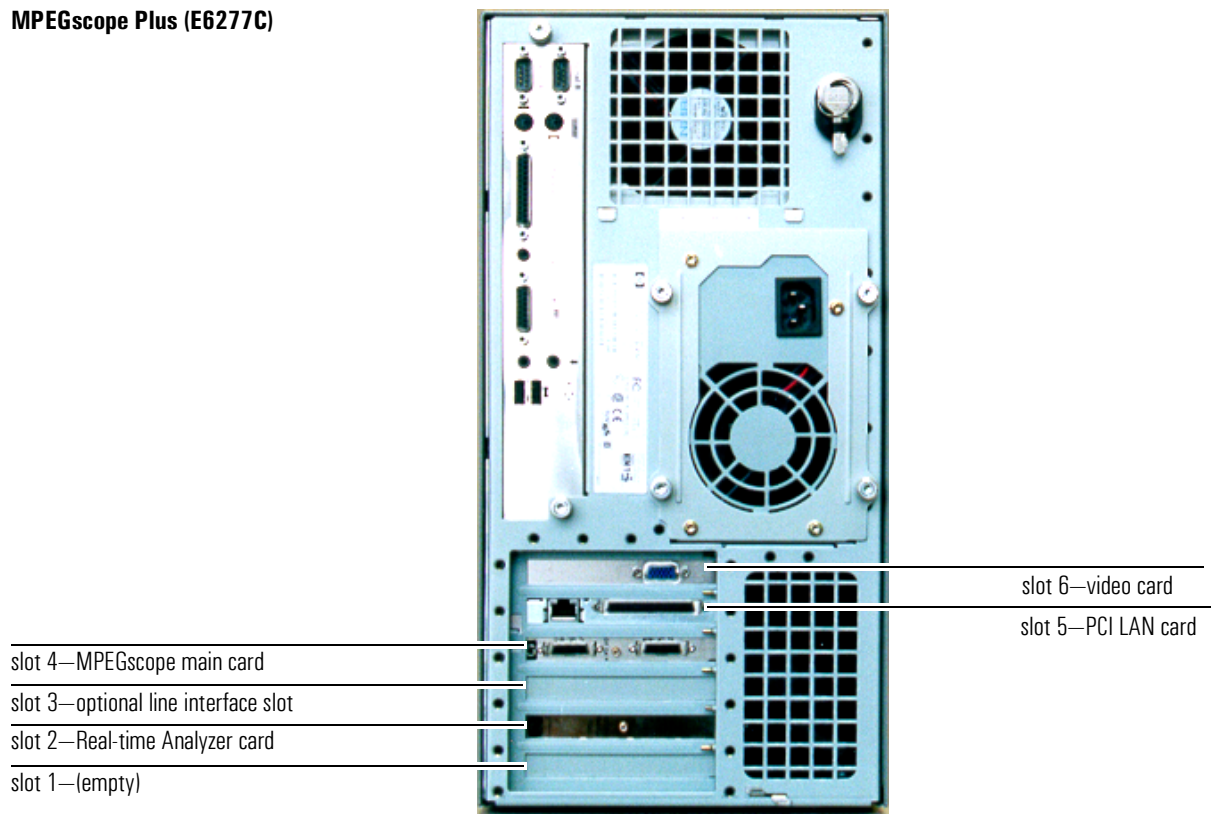
If you prefer to email your question, please write to digital video customer support at this address:

Email dv-support@hp.com

MPEGscope Plus and MPEGscope Lite

This section explains how to install the ARIB interface into the MPEGscope Plus or Lite models. Normally, you will install the interface into slot 3, the optional line interface slot. If you have a different MPEGscope PC than the one illustrated below, you can still follow the procedure described in this section, as the affected cards are installed in the same positions.

MPEGscope Plus (E6277C)



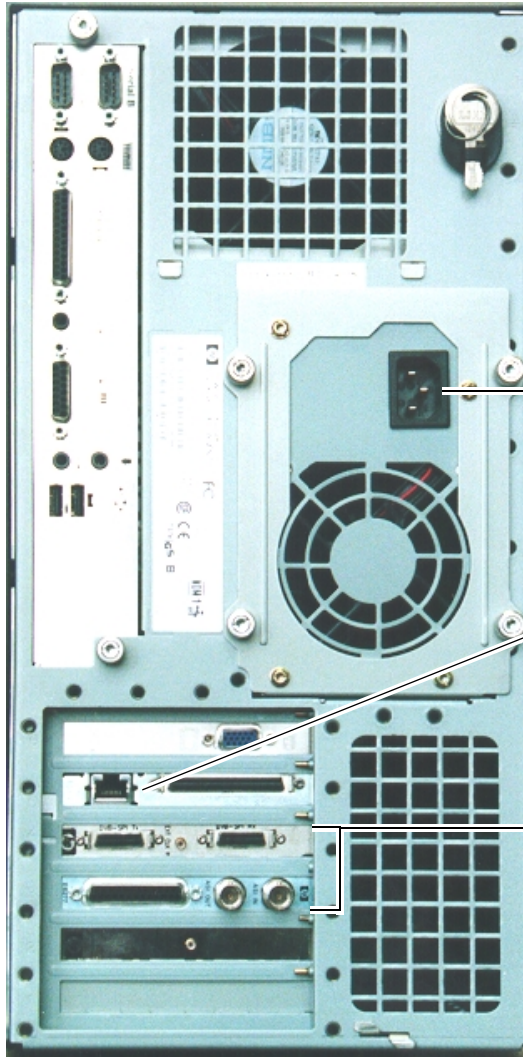
Note

If your MPEGscope is housed in a Kayak XU PC and you also have another optional interface (such as the ASI & Serial ECL (DHEI) interface), you can rearrange the cards so that both the ARIB and the optional interface are installed at the same time. This alternative configuration is shown on page 9.

Step 1: Remove the cover

WARNING

Never remove the computer cover without first removing the power cord from the power outlet and any connection to a telecommunications network.

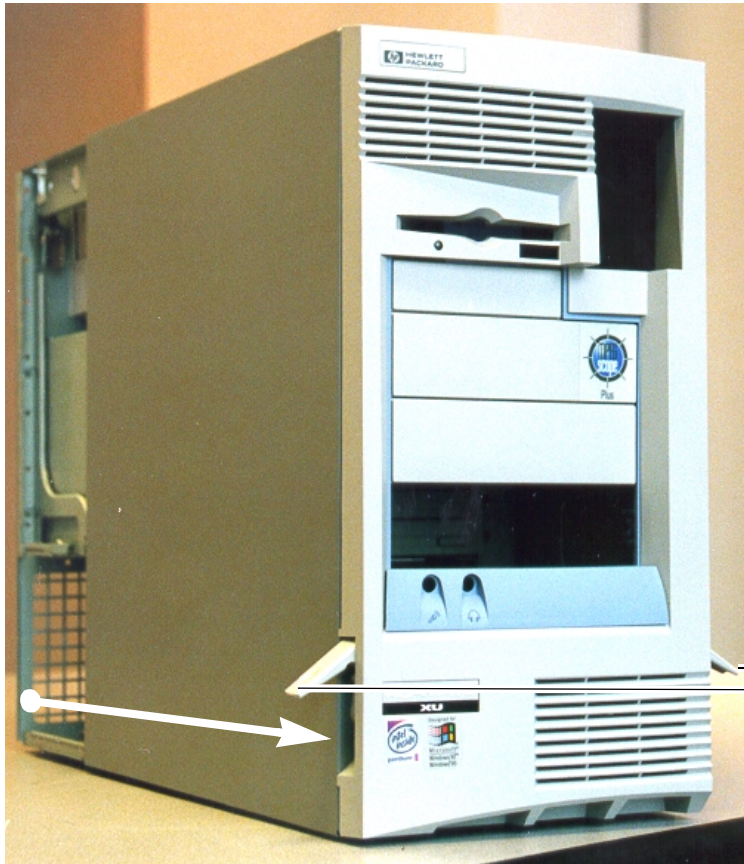


① Power off your PC.

② Unplug the AC power cord from the rear of the PC.

③ If you are connected to a telecommunications network, disconnect the network cable.

④ If you are connected to a system under test, disconnect the line interface cable(s).



⑤ Flip the two latches on the front sides of the computer cover upwards.

⑥ Grasp the cover on the sides at the back of the computer and slide it forwards and off the computer.

Step 2: Remove the optional line interface

Complete this step if your MPEGscope already has an optional line interface installed and you want to replace it with the ARIB interface. For an alternative card configuration, refer to page 9.

IMPORTANT:

- ① Attach the antistatic wrist strap to your wrist and to the PC chassis as described in the instructions on the envelope. Ensure that the copper foil end of this strap attaches to an electrical ground.

Back of computer
with connectors and
faceplates

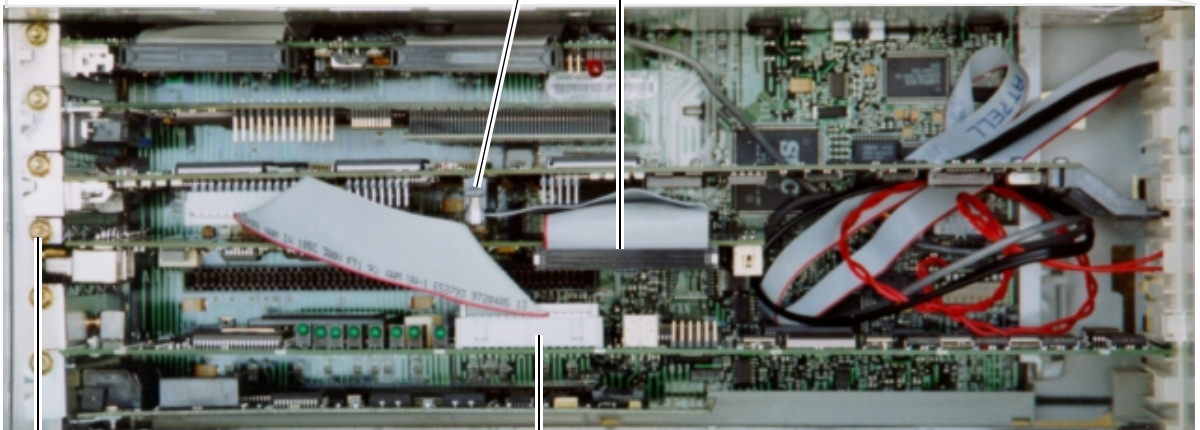


- ② Lay the computer on its side so that you can access the cards from the top.



⑥ If your optional line interface is connected to the MPEGscope main card with a cable, disconnect the other end of the cable from the MPEGscope main card and remove the cable.

④ If your optional line interface is connected to the MPEGscope main card with a cable, disconnect the cable from the optional interface card.

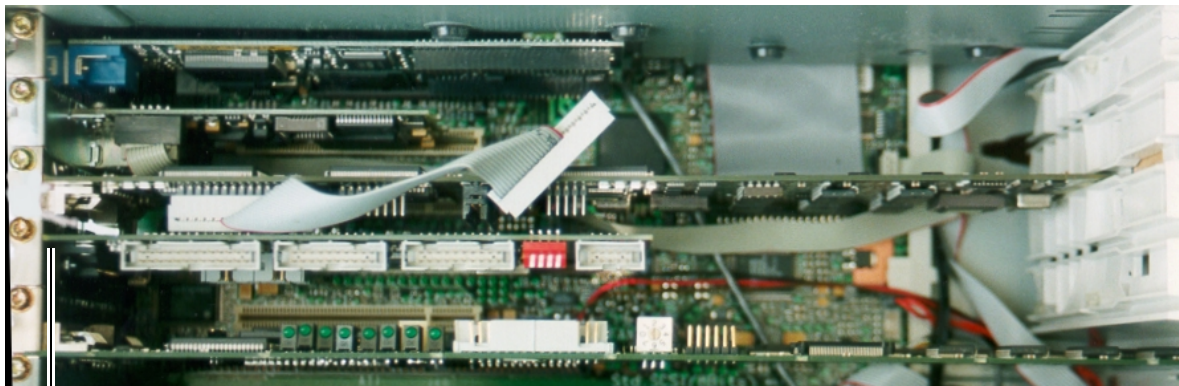


⑤ Remove the faceplate screw from slot 3 with the screwdriver provided, then remove the optional line interface.

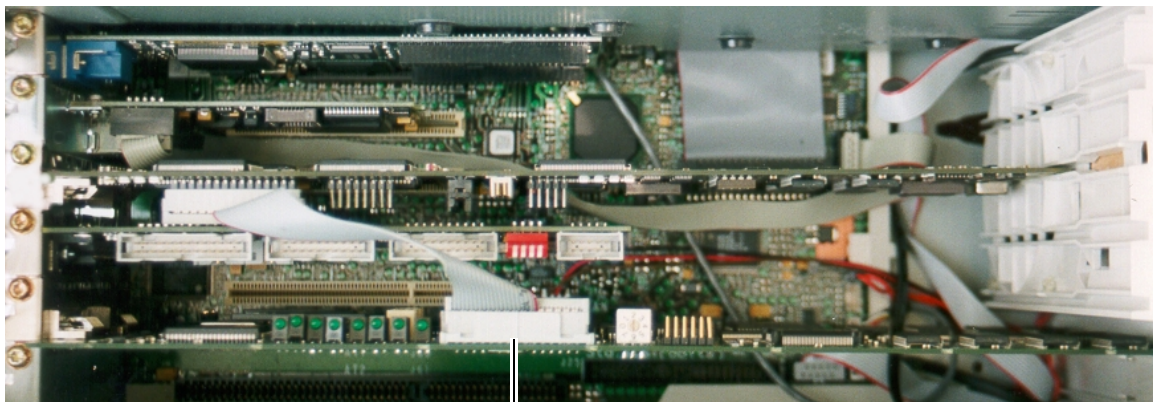
③ If your MPEGscope has a Real-time Analyzer, disconnect the ribbon cable from the Real-time Analyzer card. The cable runs from the MPEGscope main card to the Real-time Analyzer card.

Step 3: Install ARIB interface

IMPORTANT: ① Attach the antistatic wrist strap to your wrist and to the PC chassis as described in the instructions on the envelope. Ensure that the copper foil end of this strap attaches to an electrical ground.



② Install the ARIB interface card into slot 3 and screw the faceplate to the PC chassis. (If this is the first interface installed into slot 3, you will have to remove the blank faceplate first.)

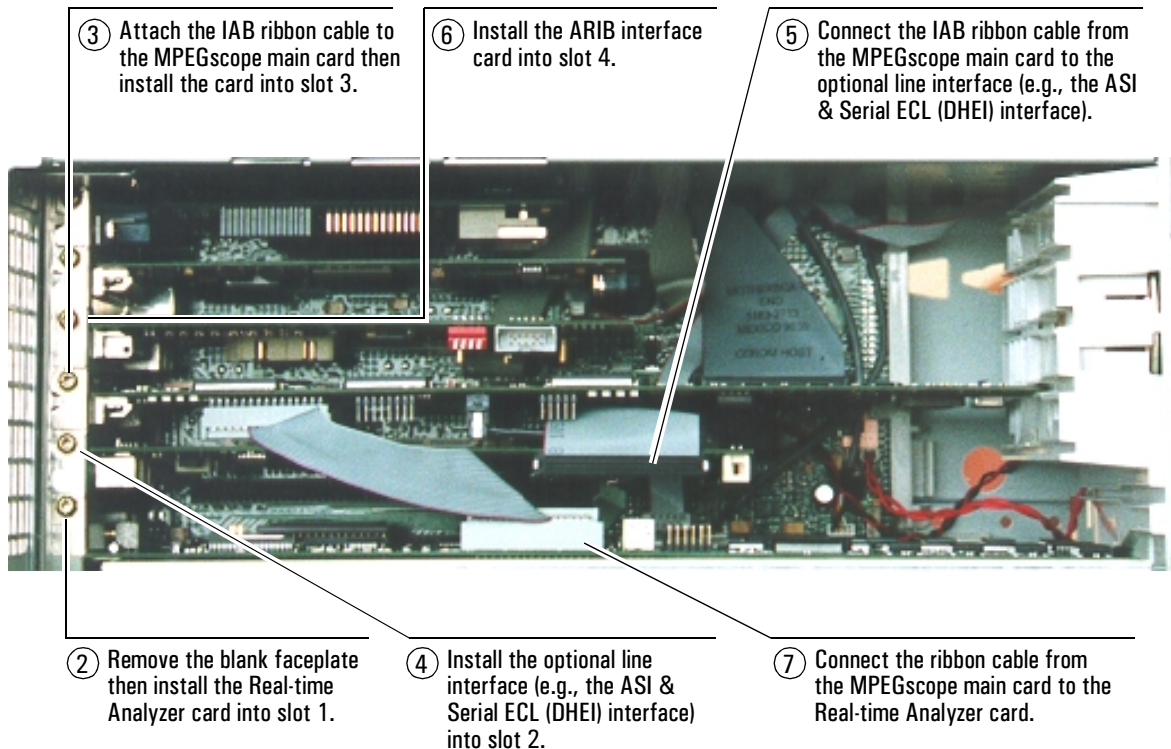


③ If your MPEGscope has a Real-time Analyzer, reconnect the ribbon cable from the MPEGscope main card to the Real-time Analyzer card.

Alternative configuration

This configuration applies only if your MPEGscope is housed in a Kayak XU PC (e.g., E6277B or E6277C). It enables you to have both the ARIB interface and another optional line interface (such as the ASI & Serial ECL (DHEI) interface) installed at the same time. The configuration requires repositioning all MPEGscope cards into the first four slots, and replaces Steps 2 and 3 on pages 6 to 8. Follow all other steps as usual.

- ① Remove the cards from slots 2, 3 and 4, disconnecting cables as necessary.



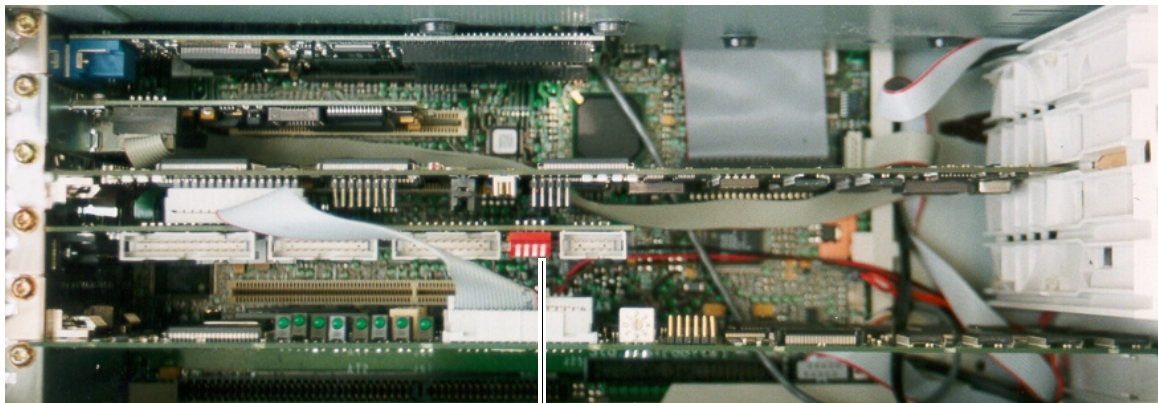
Step 4: Configure the DIP switches

DIP switches

Your ARIB interface has four DIP switches. All are set in the OPEN position when shipped from the factory.

DIP switch 1 is user-configurable, and controls the way data is buffered. In **Continuous BCK Mode (OPEN)**, data is passed through the interface without buffering. Clock gapping is output exactly as it comes in. In **Gapped BCK Adaptation Mode (CLOSED)**, data is buffered until a complete packet has been received, thus incurring a one-packet delay. It is then sent out using a 12.5 MHz clock.

DIP switches 2, 3, and 4 should be left in the OPEN position.



Set the position of DIP switch 1 as follows:

- OPEN: Continuous BCK Mode
- CLOSED: Gapped BCK Adaptation Mode

Restarting MPEGscope

Each time you change the mode for DIP switch 1, you must reset the ARIB interface by restarting MPEGscope. You can do this by toggling DIP switch 4 to the CLOSED position then back to the OPEN position.

Avoiding Physical (PSYNC) errors

Clock gapping in the bitstream may cause **Physical (PSYNC)** errors when monitoring from the Real-time Analyzer, especially in **Continuous BCK MODE**. You can avoid these errors (unless the clock gapping is very long) by changing to **Gapped BCK Adaptation Mode** and configuring the Real-time Analyzer's input packet framing type as follows:

- 1 From the Launch Pad, select the **RT Analyzer** button.
- 2 From the Real-time Analyzer's main dialog, select the **Configure/System** menu.
- 3 From the **Configure System** dialog, select **Experimental (Non-std)** as the input packet framing type.

You may also see **PSync** errors at the **SPI LIF Status** dialog. You can avoid these errors by configuring the LIF Status application as follows:

- 1 From the Launch Pad, select the **LIF Status** button.
- 2 From the **SPI LIF** dialog, select the **LIF/Configure** menu.
- 3 From the **Configure SPI LIF Rx** dialog, select **Experimental** as the packet size.

If your MPEGscope software version does not include an Experimental packet size, refer to the Real-time Analyzer for the correct synchronization status.

BCK mode specifications

Dip Switch 1

	Continuous BCK Mode	Gapped BCK Adaptation Mode
Position	OPEN	CLOSED
Details	<p>The BCK input is expected to be a continuous clock. TPD (7:0) and PSY are sampled on the rising edge of BCK.</p> <p>A gapped BCK may be used in this mode, but if the gap is large, the Real-time Analyzer will flag a Physical error.</p>	<p>The ARIB data is sampled on the rising edge of the BCK, rate-adapted to a 12.5 Mb/s stream via a FIFO, then routed to the Real-time Analyzer. This guarantees a continuous clock to the Real-time Analyzer. Note that +/- 40 ns of jitter is introduced in the adaptation process.</p> <p>Because the of freedom allowed for clock gapping in the ARIB Specification, there is no guarantee of how long a clock gap could be. If the gap is too long, the Real-time Analyzer may still show Physical errors.</p>

Step 5: Replace the cover



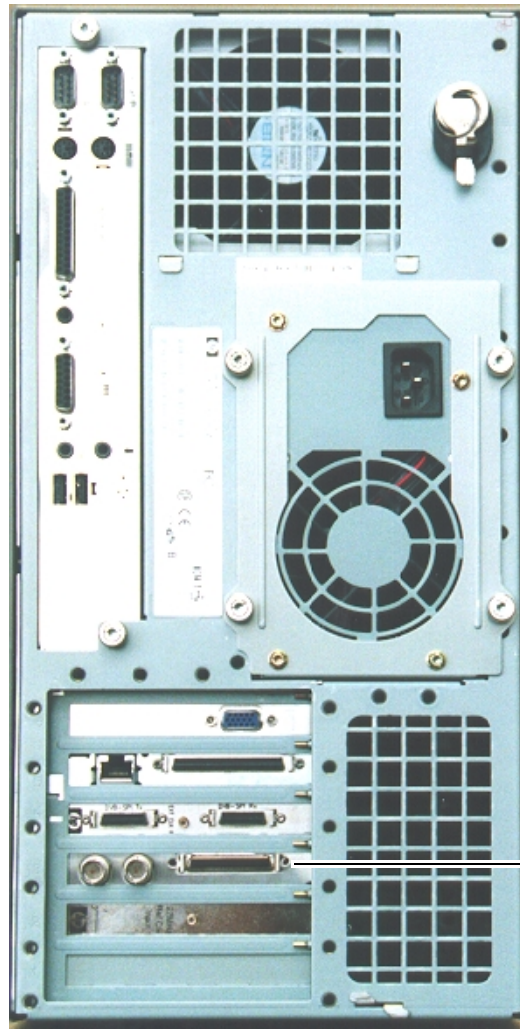
- ② Slide the cover onto the computer, making sure that the two guides at the bottom of the case slide into the two rails at the base of the computer. Firmly slide the cover backwards into position.

- ① Ensure that the two latches on the front sides of the cover are lifted up.

- ③ Lower the two latches on the front sides of the cover into place.

- ④ Reconnect your mouse, keyboard, display, power cables, and LAN connection, then power on your MPEGscope.

MPEGscope Plus with ARIB interface installed

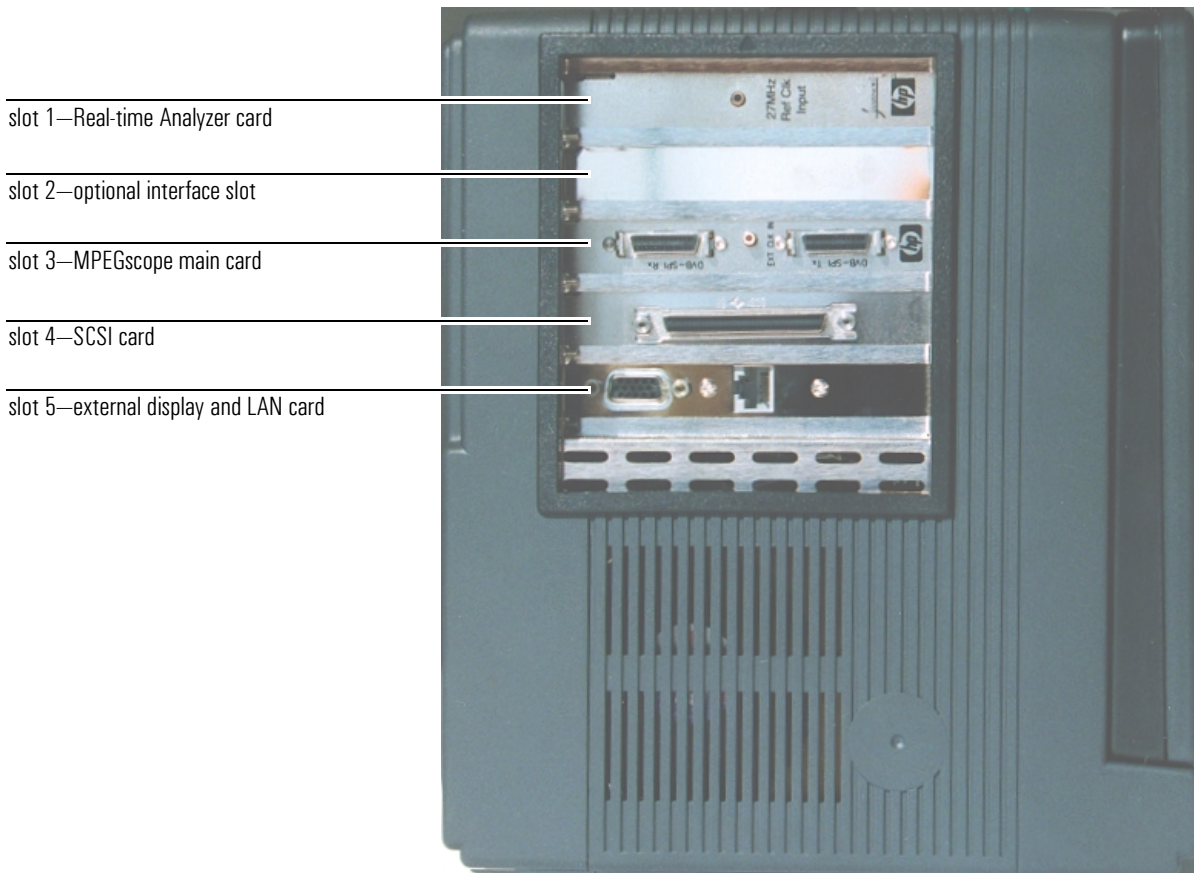


ARIB interface
installed in slot 3.

MPEGscope Portable and Portable Lite

This section explains how to install the ARIB interface into the MPEGscope Portable or Portable Lite models. You will install the interface into slot 2, the optional line interface slot, illustrated below.

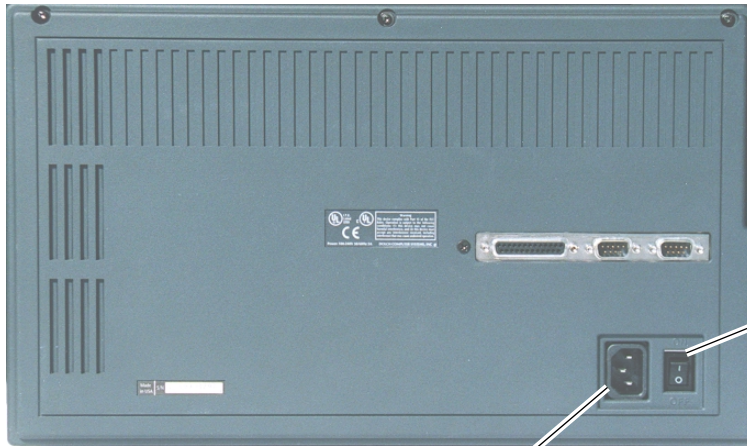
E6300C MPEGscope Portable platform



Step 1: Remove the cover

WARNING

Never remove the computer cover without first removing the power cord from the power outlet and any connection to a telecommunications network.

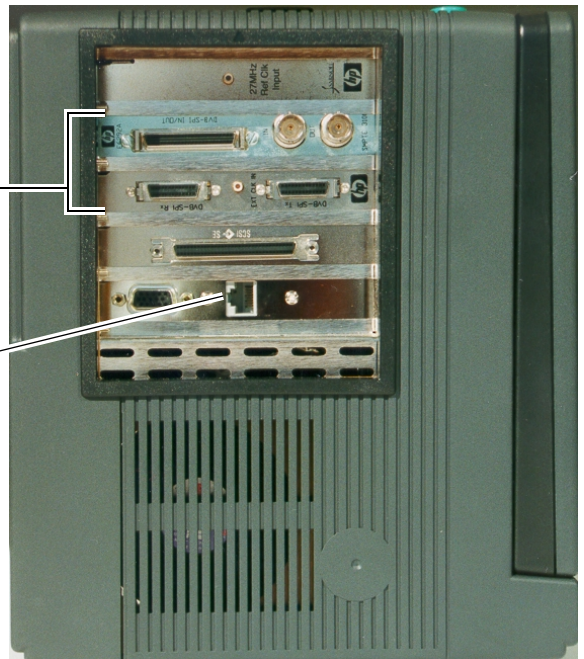


① Power off your portable.

② Unplug the AC power cord from the rear of the portable.

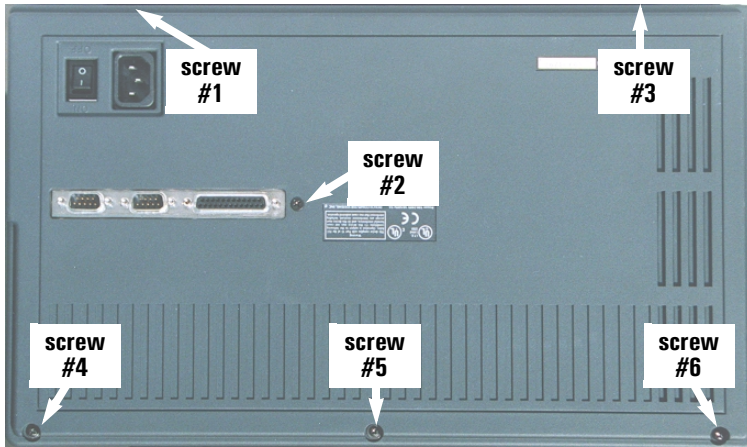
③ If you are connected to a system under test, disconnect the line interface cable(s).

④ If you are connected to a telecommunications network, disconnect the network cable.



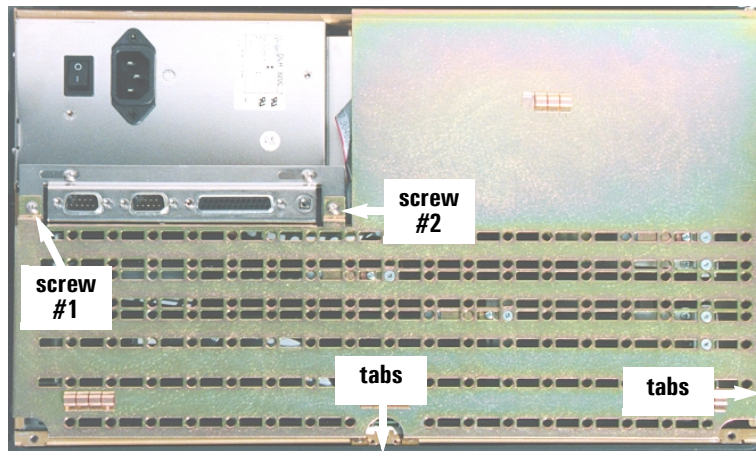
MPEGscope Portable and Portable Lite

- ⑤ Carefully lay MPEGscope Portable face down with the handle towards you.



- ⑥ Remove the six back panel screws from the back and side, then lift off the back panel.

- ⑦ Remove the two metal shield screws, then gently pull tabs from slots and remove the metal shield.



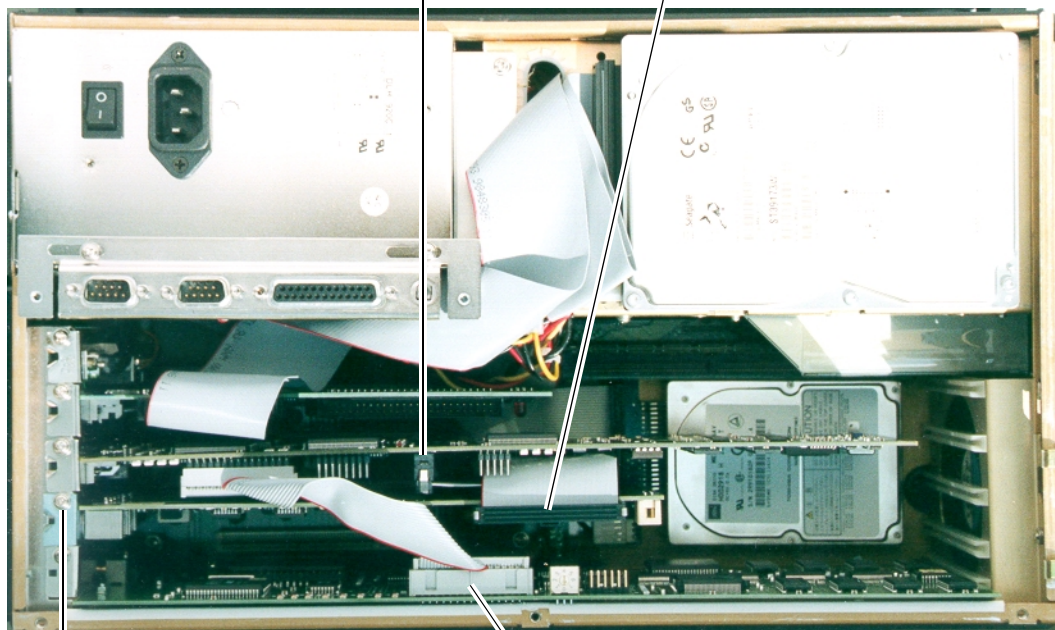
Step 2: Remove optional interface

Complete this step if your MPEGscope already has an optional interface installed and you want to replace it with the ARIB interface.

IMPORTANT: ① Attach the antistatic wrist strap to your wrist and to the PC chassis as described in the instructions on the envelope. Ensure that the copper foil end of this strap attaches to an electrical ground.

⑤ If your optional line interface is connected to the MPEGscope main card with a cable, disconnect the other end of the cable from the MPEGscope main card and remove the cable.

③ If your optional line interface is connected to the MPEGscope main card with a cable, disconnect the cable from the optional interface card.

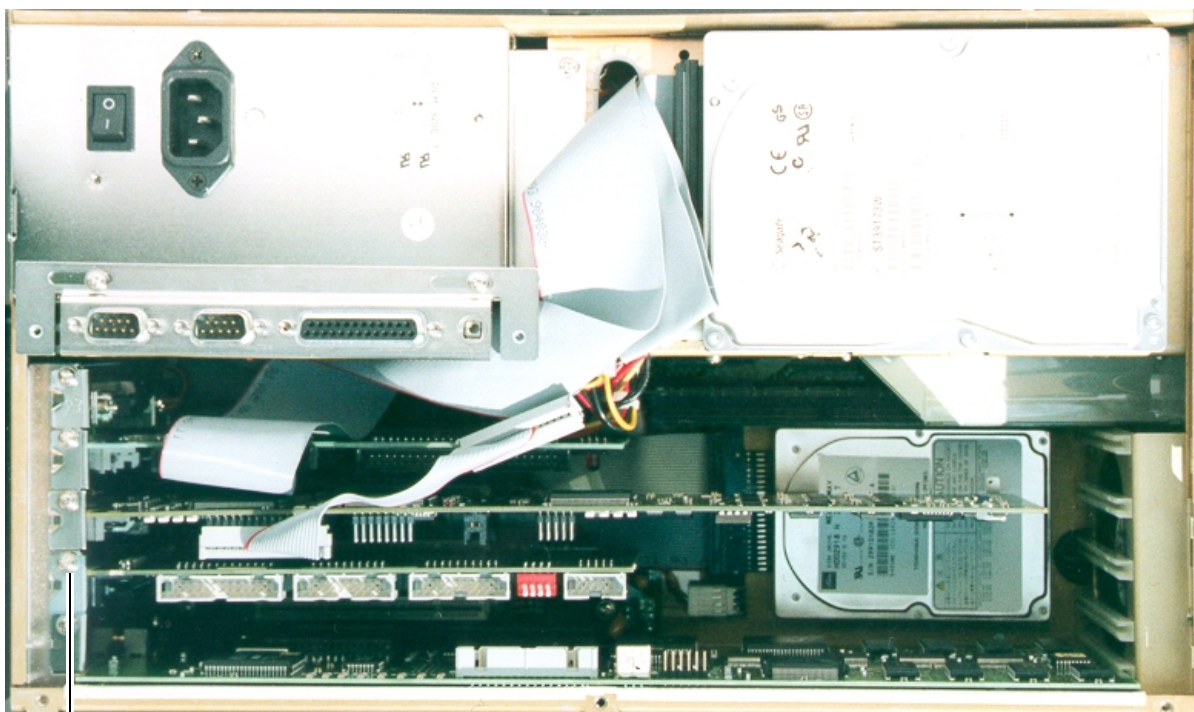


④ Remove the faceplate screw from slot 2 with the screwdriver provided, then remove the optional line interface.

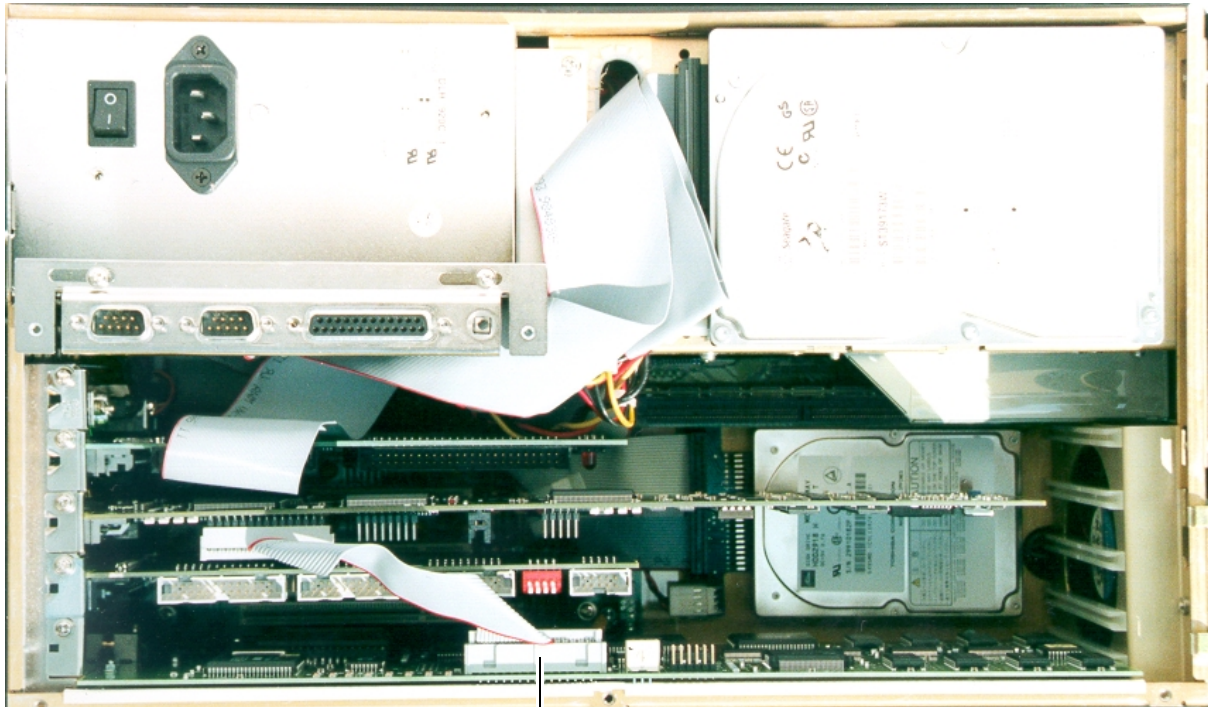
② If your MPEGscope has a Real-time Analyzer, disconnect the ribbon cable connector from the Real-time Analyzer card. The cable runs from the MPEGscope main card to the Real-time Analyzer card.

Step 3: Install ARIB interface

IMPORTANT: ① Attach the antistatic wrist strap to your wrist and to the PC chassis as described in the instructions on the envelope. Ensure that the copper foil end of this strap attaches to an electrical ground.



② Install the ARIB interface card into slot 2 and screw the faceplate to the PC chassis. (If this is the first interface installed into slot 2, you will have to remove the blank faceplate first.)

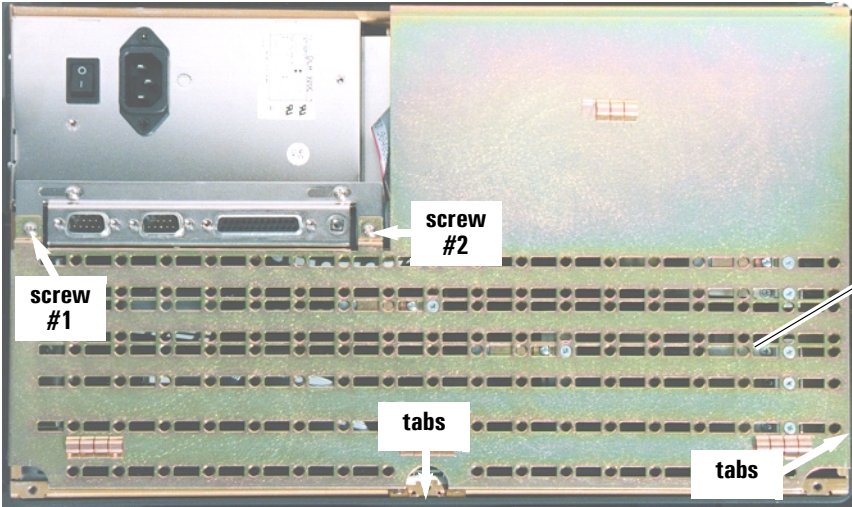


- ③ If your MPEGscope has a Real-time Analyzer, reconnect the ribbon cable from the MPEGscope main card to the Real-time Analyzer card.

Step 4: Configure the DIP switches

For a complete description of this procedure, refer to Step 4 of the “MPEGscope Plus and MPEGscope Lite” section on pages 10 to 11.

Step 5: Replace the cover

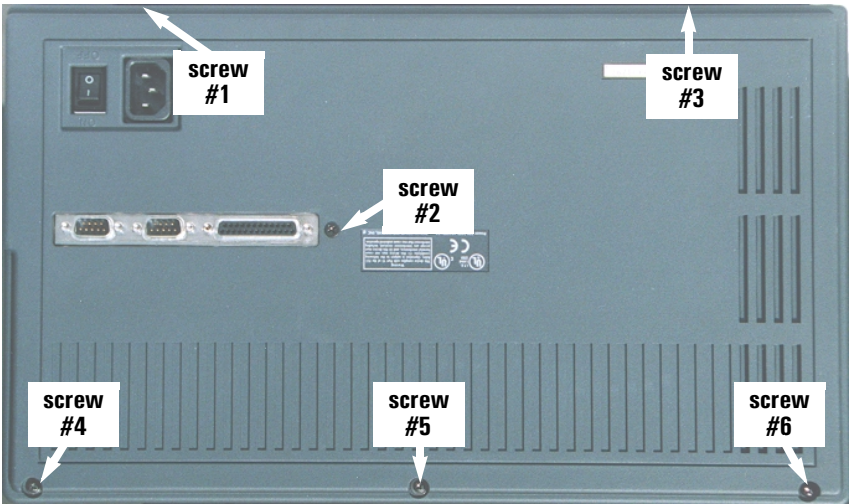


① Insert tabs on the sides of the metal shield into the slots on the outer frame, then replace the two metal shield screws.

② A plastic guide for the MPEGscope main card is located on the *inside* of the metal shield (by the third plastic guide screw). Use a small screwdriver to push down the plastic guide until the edge of the MPEGscope main card is engaged in the slot on the guide.

③ Place the back cover in position and replace the six back panel screws.

④ Reconnect your display, power cables, and LAN connection, then power on your MPEGscope Portable.

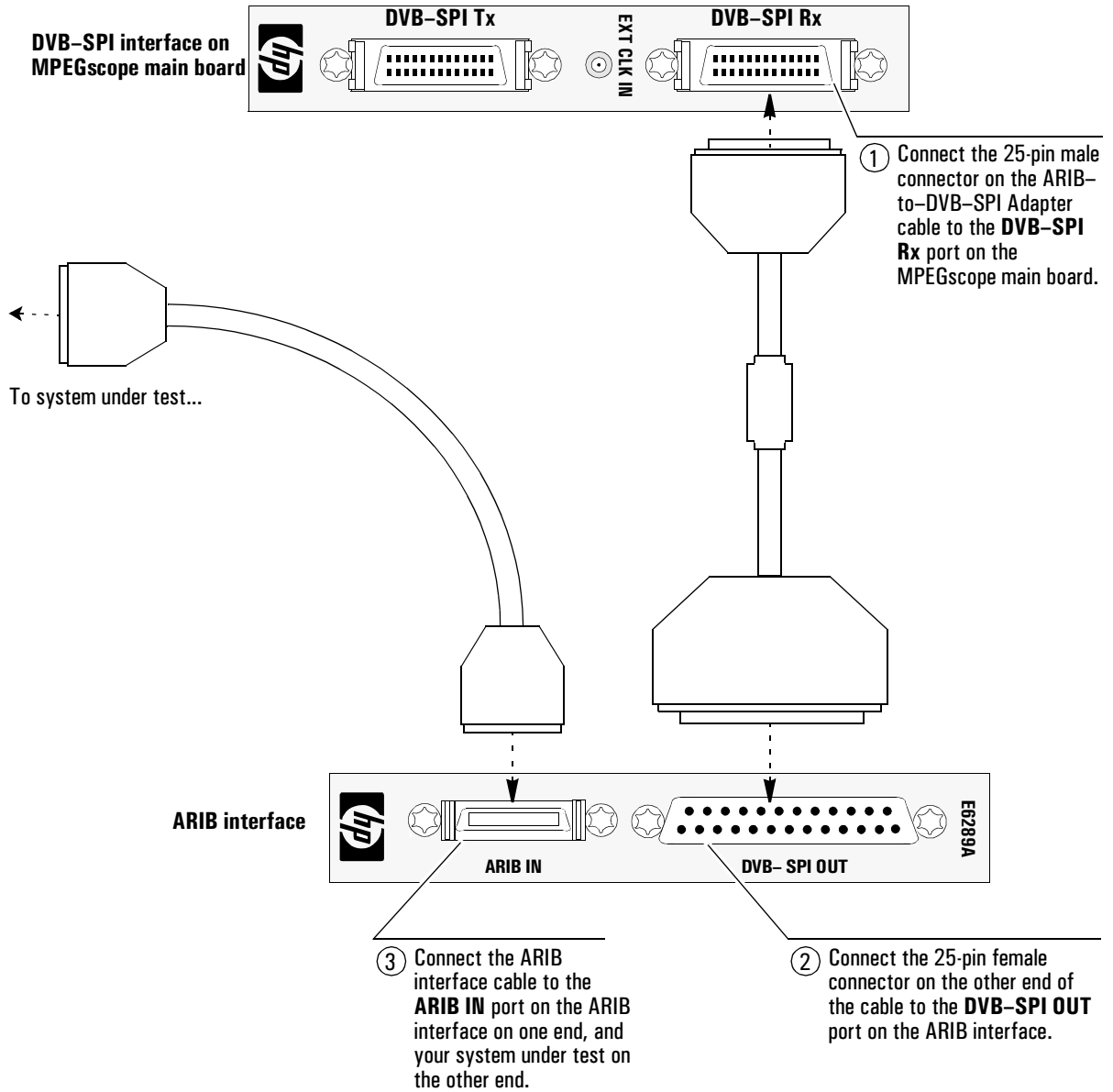


E6300A MPEGscope Portable with ARIB interface installed

ARIB interface installed in slot 2.

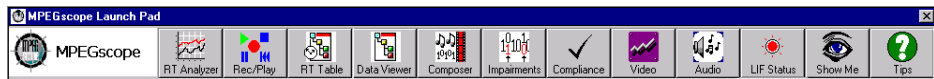


Connecting to the ARIB interface

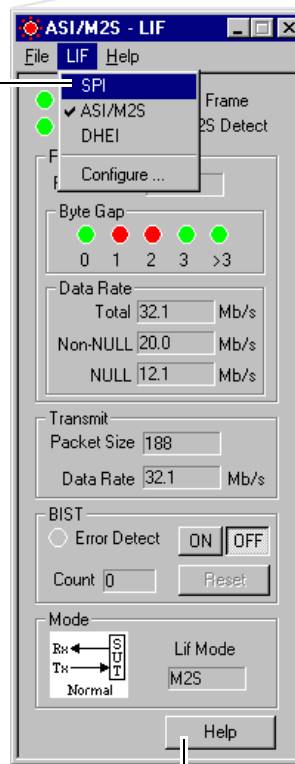


Configuring the software

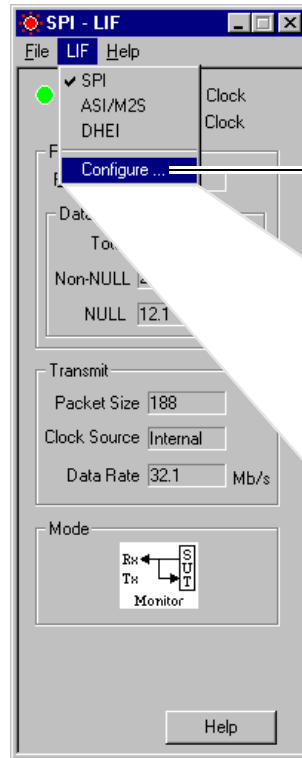
Because the ARIB interface receives and transmits data via the MPEGscope SPI interface, you do not need special ARIB interface software. You can set receiver and transmitter options from the SPI interface application, as illustrated below.



① Select the SPI interface.

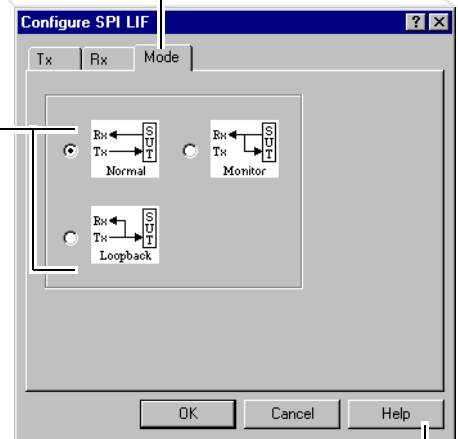


For information about this dialog, press the **Help** button.



② Select **Configure**.

③ Select the **Mode** tab.



④ Select the mode to use for your test.

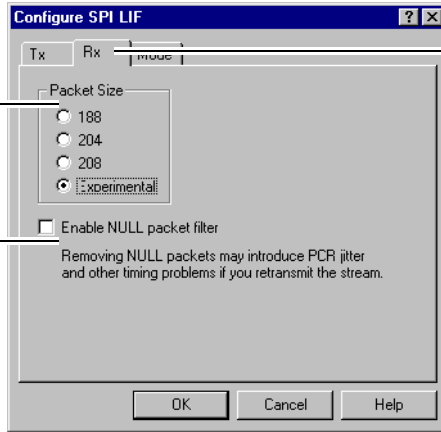


For information about modes, press the **Help** button. You can also click on a field using the right mouse button.

Configuring the software

⑥ Select receiver options.

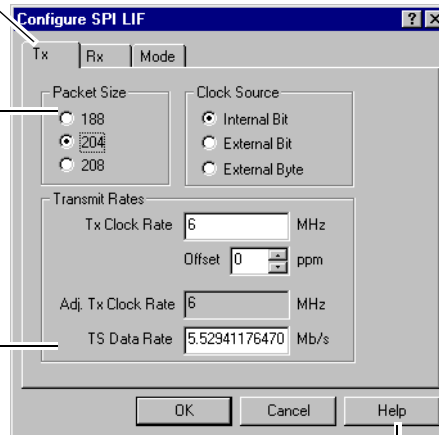
If you have set the ARIB interface in **Gapped BCK Adaptation Mode**, select **Experimental** for the packet size.



⑤ Select the Rx tab.

⑦ Select the Tx tab.

⑧ Select transmitter options.



⑨ Close the dialog.



For information about receiver and transmitter options, press the **Help** button at the bottom of the dialog. You can also click on a field using the right mouse button.

ARIB interface specifications

Type	Biphase mark
Maximum line rate	40 Mb/s (Minimum receive and transmit rate is 16 Mb/s)
Timestamps	Packet timestamp clock: 10 MHz +/- 5 ppm Resolution of timestamp clock: 100 ns Packet timestamp sampling is accurate to within +/- 1 timestamp clock period between consecutive packets
Electrical Spec	800 mV pp (nominal)
Connector Type	75 Ω BNC
Standard	SMPTE 310M Standard, Sept. 98
Part Number	E6292A

WARNING

To ensure the Electromagnetic Compatibility (EMC) of MPEGscope, use shielded cables on all interfaces.

