Technical Reference

Tektronix

MTS300 MPEG Test System
Hardware and Software Installation

071-0667-01

This document applies to firmware version 5.1.

Warning
The servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to all safety summaries prior to performing service.

www.tektronix.com

Tektronix, Inc., P.O. Box 500, Beaverton, OR 97077

WARRANTY

Tektronix warrants that the products that it manufactures and sells will be free from defects in materials and workmanship for a period of one (1) year from the date of shipment. If a product proves defective during this warranty period, Tektronix, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, Customer must notify Tektronix of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the service center designated by Tektronix, with shipping charges prepaid. Tektronix shall pay for the return of the product to Customer if the shipment is to a location within the country in which the Tektronix service center is located. Customer shall be responsible for paying all shipping charges, duties, taxes, and any other charges for products returned to any other locations.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. Tektronix shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than Tektronix representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; c) to repair any damage or malfunction caused by the use of non-Tektronix supplies; or d) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

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General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. To avoid potential hazards, use this product only as specified.

Only qualified personnel should perform service procedures.

While using this product, you may need to access other parts of the system. Read the *General Safety Summary* in other system manuals for warnings and cautions related to operating the system.

To Avoid Fire or Personal Injury

Use Proper Power Cord. Use only the power cord specified for this product and certified for the country of use.

Ground the Product. This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded.

Observe All Terminal Ratings. To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the product manual for further ratings information before making connections to the product.

Do not apply a potential to any terminal, including the common terminal, that exceeds the maximum rating of that terminal.

Do Not Operate Without Covers. Do not operate this product with covers or panels removed.

Use Proper Fuse. Use only the fuse type and rating specified for this product.

Avoid Exposed Circuitry. Do not touch exposed connections and components when power is present.

Wear Eye Protection. Wear eye protection if exposure to high-intensity rays or laser radiation exists.

Do Not Operate With Suspected Failures. If you suspect there is damage to this product, have it inspected by qualified service personnel.

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in an Explosive Atmosphere.

Keep Product Surfaces Clean and Dry.

Provide Proper Ventilation. Refer to the manual's installation instructions for details on installing the product so it has proper ventilation.

Symbols and Terms

Terms in this Manual. These terms may appear in this manual:

WARNING. *Warning statements identify conditions or practices that could result in injury or loss of life.*

CAUTION. *Caution statements identify conditions or practices that could result in damage to this product or other property.*

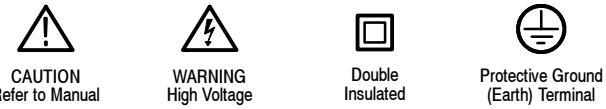
Terms on the Product. These terms may appear on the product:

DANGER indicates an injury hazard immediately accessible as you read the marking.

WARNING indicates an injury hazard not immediately accessible as you read the marking.

CAUTION indicates a hazard to property including the product.

Symbols on the Product. The following symbols may appear on the product:



Service Safety Summary

Only qualified personnel should perform service procedures. Read this *Service Safety Summary* and the *General Safety Summary* before performing any service procedures.

Do Not Service Alone. Do not perform internal service or adjustments of this product unless another person capable of rendering first aid and resuscitation is present.

Disconnect Power. To avoid electric shock, switch off the instrument power, then disconnect the power cord from the mains power.

Use Care When Servicing With Power On. Dangerous voltages or currents may exist in this product. Disconnect power, remove battery (if applicable), and disconnect test leads before removing protective panels, soldering, or replacing components.

To avoid electric shock, do not touch exposed connections.

Preface

This manual provides installation and first-time operating instructions for the MTS300 Series MPEG Test Systems software version 5.1.

The individual sections of this manual provide specific information on the following topics:

- The *Hardware Installation* section contains basic instructions on how to install and operate the test system.
- The *First Time Operation* section contains procedures to verify the test system is functioning properly.
- The *Specifications* section lists the electrical characteristics of the platform, I/O system, and the Synchronous Serial Interface. This section also includes environmental and physical characteristics and repackaging information.
- The *Software Repair and Recovery* section contains procedures to trouble-shoot and restore the operating system and device drivers and reinstall the MTS300 applications software.

For the latest information about MTS300 Series Software features and bugs, refer to the *MPEG Test System Software Version 5.1 Read This First* document, Tektronix part number 071-0666-XX, that accompanied your test system, software product, or upgrade.

Related Documents

For additional information about using MTS300 Series software to monitor, analyze, and generate MPEG-2, DVB, and ATSC data streams, refer to the following manuals:

The *MTS300 MPEG Test System Real-Time Analysis User Manual*, Tektronix part number 071-0658-XX, contains information about using the Real-Time MPEG-2 Analyzer application.

The *MTS300 MPEG Test System MPEG-2 DVB/ATSC System Analyzer User Manual*, Tektronix part number 071-0659-XX, contains information about using the Deferred-Time Analyzer and DVB Channel Coding and Decoding applications.

The *MTS300 MPEG Test System Program Stream Analyzer User Manual*, Tektronix part number 071-0662-XX, contains information about using the deferred-time Program Stream Analyzer application.

The *MTS300 MPEG Test System Stream Creation Applications User Manual*, Tektronix part number 071-0778-XX, contains information about using the Multiplexer, DVB Table Editor, ATSC Table Editor, DVB Channel Coding and Decoding, Jitter Adder, Error Injector, and Open MUX Controller applications.

The *MTS300 MPEG Test System Dolby Digital Audio Stream Analyzer User Manual*, Tektronix part number 071-0661-XX, contains information about using the deferred-time AC-3 Audio Stream Analyzer application.

The *MTS300 MPEG Test System Audio Stream Analyzer User Manual*, Tektronix part number 071-0663-XX, contains information about using the deferred-time MPEG Audio Stream Analyzer application.

The *MTS300 MPEG Test System Video Stream Analyzer User Manual*, Tektronix part number 071-0664-XX, contains information about using the deferred-time MPEG Video Stream Analyzer application.

For additional information about test system maintenance and repair, refer to the optional *MTS300 MPEG Test System Service Manual*, Tektronix part number 071-0668-XX. Contact your nearest Tektronix representative or field office for ordering information.

For additional information about the Windows NT operating system, refer to the online help provided with the test system.

Contacting Tektronix

Phone	1-800-833-9200*
Address	Tektronix, Inc. Department or name (if known) 14200 SW Karl Braun Drive P.O. Box 500 Beaverton, OR 97077 USA
Web site	www.tektronix.com
Sales support	1-800-833-9200, select option 1*
Service support	1-800-833-9200, select option 2*
Technical support	Email: techsupport@tektronix.com 1-800-833-9200, select option 3* 1-503-627-2400 6:00 a.m. – 5:00 p.m. Pacific time

*** This phone number is toll free in North America. After office hours, please leave a voice mail message.**
Outside North America, contact a Tektronix sales office or distributor; see the Tektronix web site for a list of offices.

Hardware Installation

Hardware Installation

This section contains the following information:

- Unpacking the MTS300 system
- Hardware installation
- Repackaging the MTS300 system for shipment

For information on generating and analyzing MPEG transport streams, refer to the MTS300 system user manuals. See page ix for a list of the available manuals.

Refer to *First Time Operation* on page 2–1 for instructions on how to verify basic instrument operation after the MTS300 system has been installed.

Unpacking the MTS300 System

The tables in this section list the standard and optional accessories available for the MTS300 system.

***NOTE**. You must use the original box and packaging when returning your test system to Tektronix. In the event shipping is required for upgrade or repair, refer to the repackaging instructions beginning on page 1–19.*

Standard Accessories

Table 1–1 lists the standard accessories that are shipped with your MTS300 system. Use this list to ensure that your order is complete.

Table 1-1: Standard accessories for the MTS300 system

Quantity	Description	Part number
1	Read This First	071-0666-xx
1	MTS300 MPEG Test System Real-Time Analysis User Manual	071-0658-XX (includes CD-ROM)
1	Applications software recovery disc	063-3325-XX (not orderable)
1	MTS300 MPEG Test System Hardware and Software Installation Technical Reference (this manual)	071-0667-XX
1	Rackmount kit (with instructions) *This kit ships in a separate box.*	016-1691-XX
1	Power cord (North American)	161-0066-00

Table 1-1: Standard accessories for the MTS300 system (cont.)

Quantity	Description	Part number
1	Stylus (for use with the touchscreen)	119-6107-XX
1	SCSI terminator (installed on the transport monitor)	650-4062-XX
1	Front panel cover	200-4408-XX
1	Operating system recovery disc	063-3366-XX
1	License Password document **Note:** *Keep this document in a safe place. You will need it if you ever have to reinstall your software.*	063-3158-XX
1	Emergency backup disk (floppy disk)	
1	Mouse	
1	Keyboard	
1	Statement of ISO Compliance (in envelope)	

Optional Accessories

Table 1–2 lists the optional accessories you can order for your MTS300 system. See your Tektronix representative for help ordering these optional accessories.

Table 1-2: Optional accessories

Description	Part number
MTS300 MPEG Test System Service Manual	071-0668-XX
SPI (LVDS Parallel) interface, two inputs and outputs This upgrade kit can be factory installed if ordered at the time you purchase the MTS300 test system	MTS3FLV
DHEI (Digicipher II) interface, Expansion in and Expansion out ports This upgrade kit can be factory installed if ordered at the time you purchase the MTS300 test system	MTS3FDE
SMPTE310M (SSI) interface, two inputs and outputs This upgrade kit can be factory installed if ordered at the time you purchase the MTS300 test system	MTS3FSS
Power cord options:	
Option A1 Universal Euro 220 V	161-0066-09
Option A2 United Kingdom, 240 V	161-0066-10
Option A3 Australian 240 V	161-0066-11

Table 1-2: Optional accessories (cont.)

Description	Part number
Option A5 Swiss 220 V	161-0154-00
Option A6 Japan 100 V	161-0066-00 with 013-0310-00 adapter

Options

Table 1–3 lists the options available when you purchase the test system.

Table 1-3: MTS300 systemoptions

Option	Description
MTS300	Test System with ASI/M2S interface and the following client applications: Master Client Expert Client Configuration Client Stream Player Client Stream Recorder Client The MTS300 also comes with the Private Syntax Interpreter and the Jitter Adder applications.
Option DT	Deferred-Time Analysis System, which includes the following applications: MPEG-2 DVB/ATSC System Analyzer MPEG-2 DVB/ATSC Multiplexer DVB Table Editor ATSC Table Editor DVB Channel Coding and Decoding Error Injector
Option AC3	Dolby Digital (AC-3) Analyzer
Option OC	ViAccess Conditional Access
Option OM	Real-Time Multiplexer (OpenMux)
Option ES	MPEG Audio and MPEG Video Elementary Stream Analyzers
Option PS	Program Stream Analyzer

Upgrades

Table 1–4 lists the upgrades available for the MTS300 MPEG Test System. You can order some of these upgrades when you purchase your instrument and they will be installed at the factory.

Table 1-4: MTS300 upgrades

Description	Part number
Adds Deferred-Time Analysis System to existing MTS300	MTS3FDT
Adds Dolby Digital (AC-3) Analyzer to existing MTS300	MTS3FAC

Table 1-4: MTS300 upgrades (Cont.)

Description	Part number
Adds ViAccess Conditional Access to existing MTS300	MTS3FOC
Adds Real-Time Multiplexing (Open Mux) to existing MTS300	MTS3FOM
Adds MPEG Audio/Video Elementary Stream Analyzers to existing MTS300	MTS3FES
Adds Program Stream Analyzer to existing MTS300	MTS3FPS
Adds SPI (LVDS) Interface to existing MTS300	MTS3FLV
Adds DHEI (GI-Digicypher) Interface to existing MTS300	MTS3FDE
Adds SSI (SMPTE310M) Interface to existing MTS300	MTS3FSS

Hardware Installation

This section provides instructions for installing the MTS300 system and making the necessary electrical connections. The MTS300 system can be operated from a bench or installed in a rack using the optional rack-mount kit. The rack-mount kit includes installation instructions.

CAUTION. *For proper cooling, provide at least two inches (5.1 cm) of clearance at the rear and to the sides of the test system, and ensure that the air temperature at all air intake vents (inside of the rack) does not exceed 40° C.*

Use the two collapsible front feet on the bottom of the MTS300 system to change the height of the front panel.

Test System Interconnections

The following procedure identifies the electrical connections. The location of the connectors on the rear panel is shown Figure 1–1. Table 1–5 describes the transport stream, network, and peripheral device connectors.

Table 1-5: Rear-panel connectors

Connector	Description
Transport stream input / output	75 Ω BNC connectors for the following signal formats:
ASI Input	Accepts both Burst and Packet mode ASI formats and M2S
ASI Output	Applications generating an output will do so on the I/O port to which the application has been assigned.
LVDS Input/Output	
DHEI Input/Output (Figure 1-2, on page 1-7)	Generate output signals or as active loop-through of the corresponding input or Stream Player/Stream Recorder output
SSI Input/Output (Figure 1-3, on page 1-8)	
Monitor	15-pin female high density-D-sub connector for SVGA monitor
Keyboard	Mini-DIN connectors for PS2 compatible keyboard (on rear and side panels)
Mouse	Mini-DIN connectors for PS2 compatible mouse (on rear and side panels)
Printer	25-pin sub-D connector for parallel communication
LAN (Ethernet)	10 Base-T/100 Base-T, RJ45 connector for Ethernet communications
RS-232/422	9-pin D-sub type connector for serial communication
SCSI	Standard, PC compatible Ultra-Wide SCSI port, 68 Pins

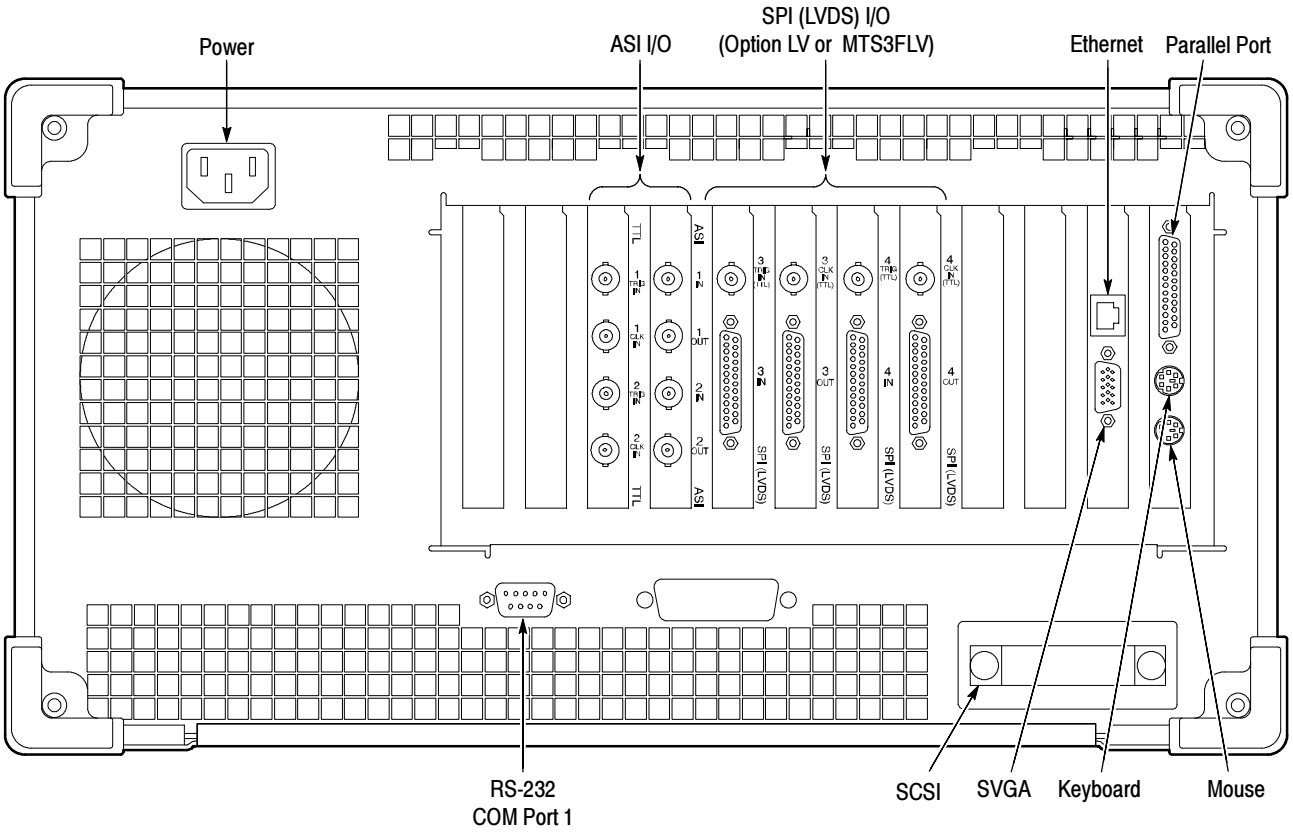


Figure 1- 1: MTS300 system rear panel connectors with Option LV (or the MTSF3LV upgrade) installed

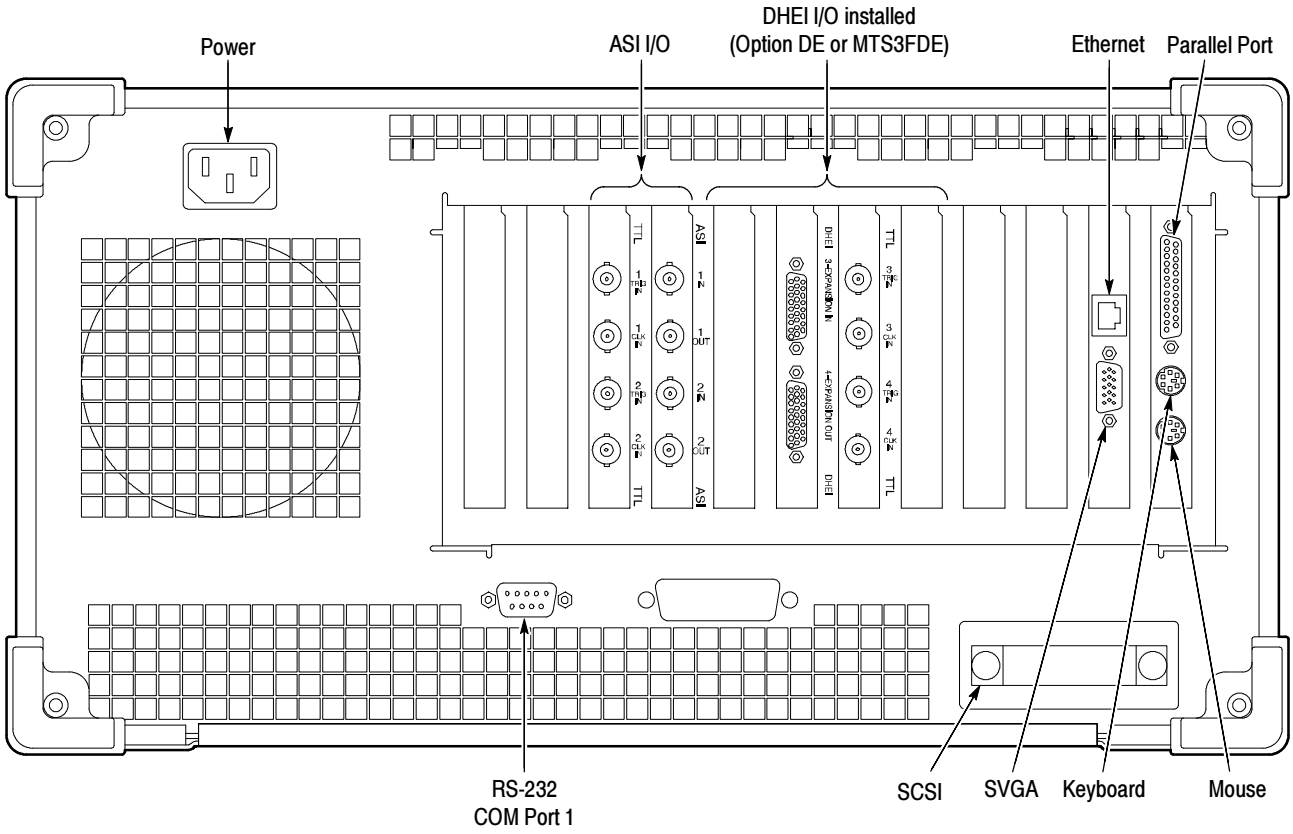


Figure 1-2: MTS300 system rear panel connectors with Option DE (or the MTS3FDE upgrade) installed

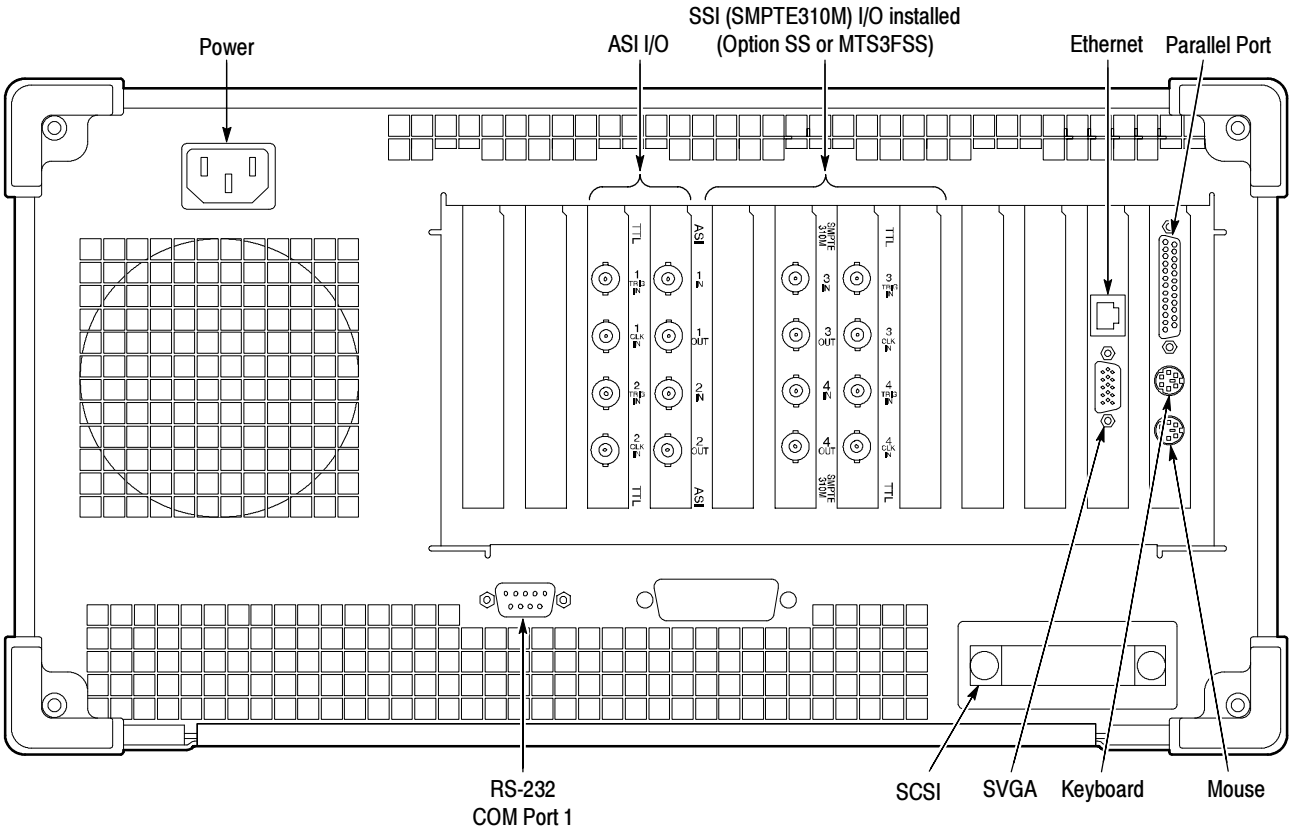


Figure 1- 3: MTS300 system rear panel connectors with Option SS (or the MTS3FSS upgrade) installed

1. Plug in the keyboard and mouse to the proper rear panel connectors. Refer to Figure 1–1. Figure 1–4 shows alternative connectors for a mouse and keyboard. The optional connections are located on the instrument side panel.

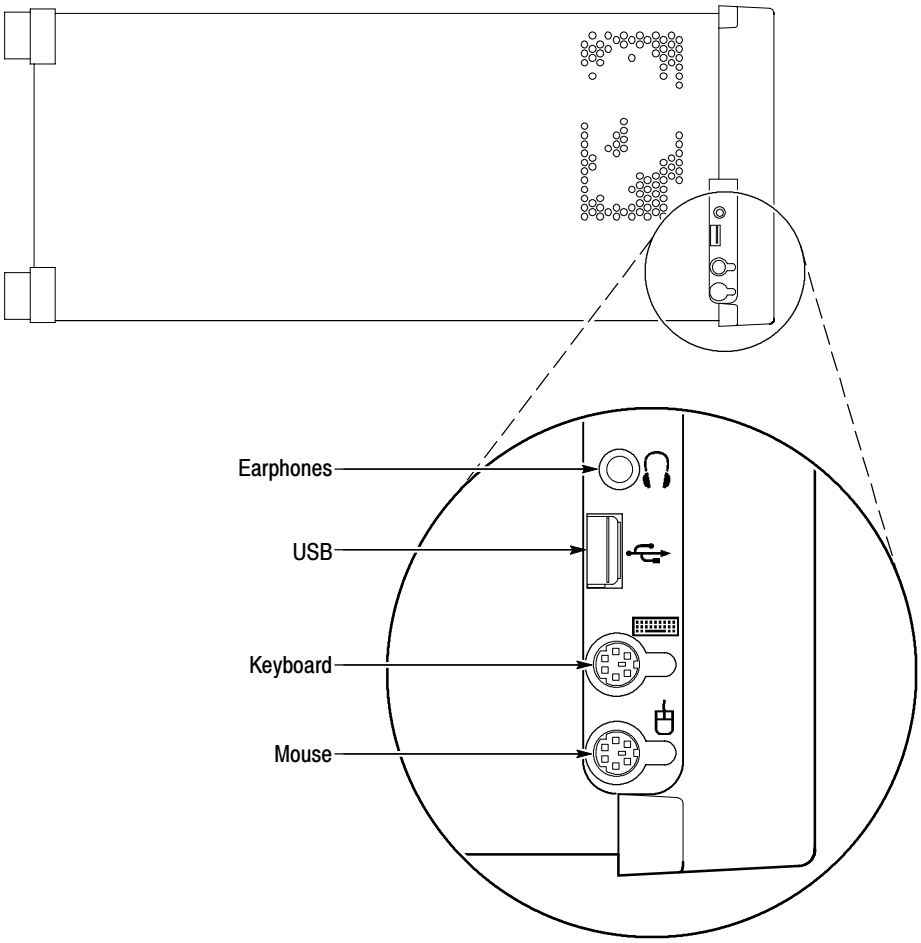


Figure 1-4: Keyboard and mouse alternative connections

2. Install the Software Key on the rear panel Parallel port. MTS300 MPEG Test System software applications will not run without the Software Key installed; do not remove or misplace the Software Key.

   To use the Parallel port with the Software Key installed, attach any parallel port cables (such as a printer) directly to the Software Key. The Software Key does not interfere with parallel communications.

***NOTE**. To run MTS300 MPEG Test System applications, the Software Key must be on the computer Parallel port. If you return the test system to a Tektronix Service Center for upgrade or repair, include the Software Key.*

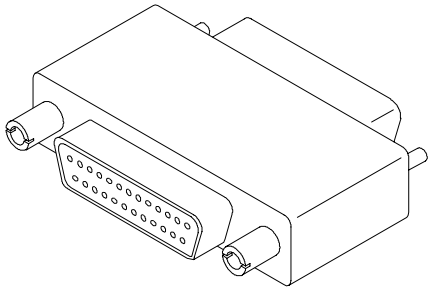


Figure 1-5: Software Key

Supplying Power

The MTS300 MPEG Test System platform is designed to operate from a single-phase power source having one of its current carrying conductors at or near earth ground (the neutral conductor). Power sources that have both current carrying conductors live with respect to ground, such as phase-to-phase or multiphase systems, are not recommended. A protective ground connection, by way of the grounding conductor in the power cord, is essential for safe operation. The electrical operating requirements are listed in Table 1–6.

Table 1-6: Electrical operating requirements

Requirement	Specification
Source Voltage	100 VAC to 240 VAC 47 Hz to 63 Hz
Fuse Rating	10 A Fast / 250 V
Maximum Power Consumption	170 Watts typical
Inrush Surge Current	36 Amps maximum
Power Factor Correction	Yes

After you have installed the MTS300 system and completed making the signal, network, and peripheral connections, plug the power cord into the mains. See Figure 1–1 for location of power connector.

CAUTION. *Do not supply power to the instrument until all connections have been made.*

WARNING. *The test system is designed for connection to an earth-grounded AC outlet. To avoid risk of electrical shock or equipment damage, do not disable the grounding plug.*

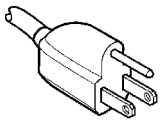
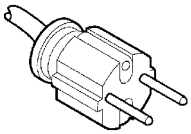
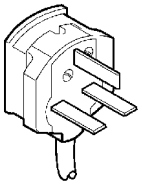
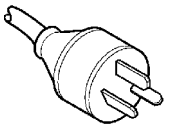
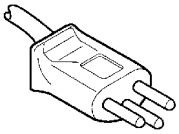
Mains Voltage Range. You can power the test system computer and monitor from mains that supply between 100 VAC and 240 VAC without setting a voltage selection switch.

Mains Frequency. The test system computer and monitor operate on either 50 Hz or 60 Hz line frequencies.

CAUTION. *To prevent damage, protect the system computer from power fluctuations and temporary interruptions with a regulating noninterruptible power supply. This device protects the hardware from damage caused by power surges and voltage spikes. In addition, it allows the system to operate temporarily during a power failure.*

Power Cord Options. Unless a specific power cord option is ordered, the system computer and monitor come standard with a power cord for North American 60 Hz, 115 VAC supplies. Table 1–7 lists the power cord options.

Table 1-7: Power cord identification

Plug configuration	Normal usage	Option number
	North America 125 V/15A Plug NEMA 5-15P	Standard
	Europe 230 V	A1
	United Kingdom 230 V	A2
	Australia 230 V	A3
	Switzerland 230 V	A5

Connecting MTS300 System I/O Ports

Figure 1–6 shows the input and output (I/O) connectors on the MTS300 rear panel for the standard ASI and optional LVDS inputs and outputs. A description of each connector follows the illustration. For I/O port specifications, refer to the *Specifications* section beginning on page 3-1. Use the I/O ports that best suit your operating environment and signal sources.

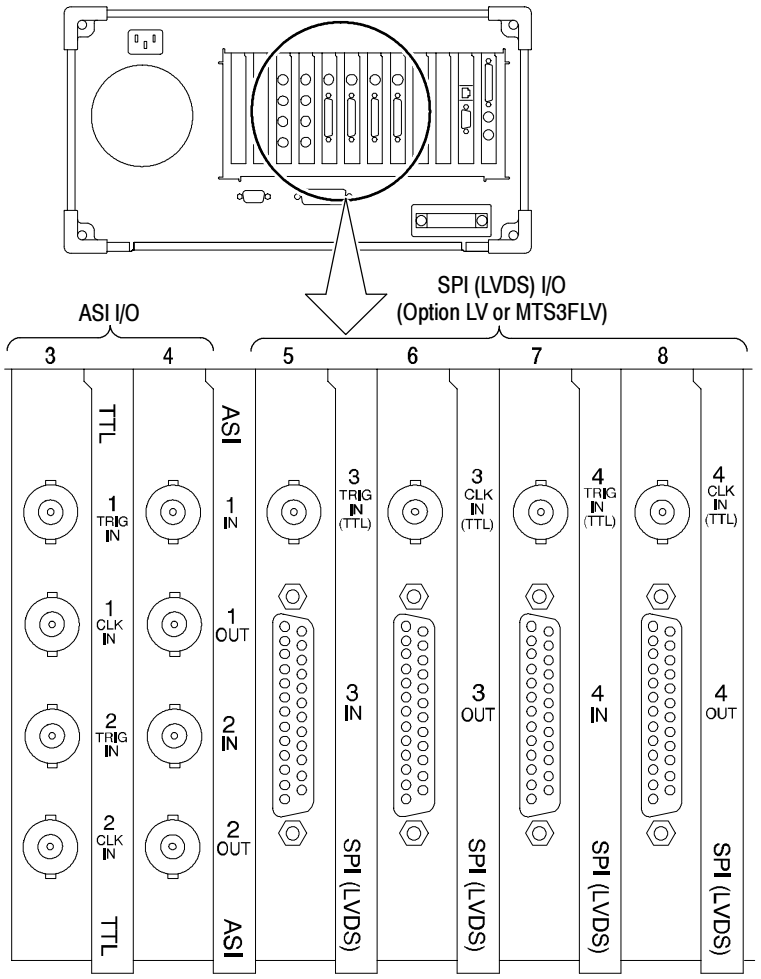


Figure 1-6: ASI and SPI (LVDS) inputs and outputs

Input

You must provide input to the MTS300 system to monitor an MPEG-2, DVB, or ATSC bit stream. The MTS300 system standard I/O is ASI serial. To change the configuration, refer to *Configuration Client Reference* in the *MTS300 MPEG Test System Real-Time Analysis User Manual*.

Trigger Input

The trigger input accepts a TTL level (0 to +5 V) signal you can use to control capture of the MTS300 system input stream to the system disks. You can configure the system to start/stop data capture on either the rising edge (low to high transition) or the falling edge (high to low transition) of the trigger signal. Refer to the *MTS300 MPEG Test System Real-Time Analysis User Manual* for further information on capturing transport stream inputs.

Clock Input

Each output port has a corresponding clock input which can be used to clock the transport stream output when using Stream Player. The clock rate is at the byte rate of the transport stream for ASI and SPI formats. The clock rate is at the bit rate of the transport stream for SMPTE310M (SSI) and DHEI (LVDS).

Output to Other Equipment

The MTS300 system can filter the input stream through the parallel or serial (ASI) connectors. Applications generating an output will do so on the I/O port to which the application has been assigned. Applications requiring an input have an output activation option that will loop-through the input signal to the output connector on the assigned I/O port.

When an output port is used to generate signals, the corresponding input port cannot be used.

Figure 1-7, on page 1-15, shows the locations for these rear-panel connectors for instruments with either Option DE or the MTS3FDE upgrade installed. Figure 1-8, on page 1-16, provides the same information for instruments with Option SS or the MTS3FSS upgrade installed.

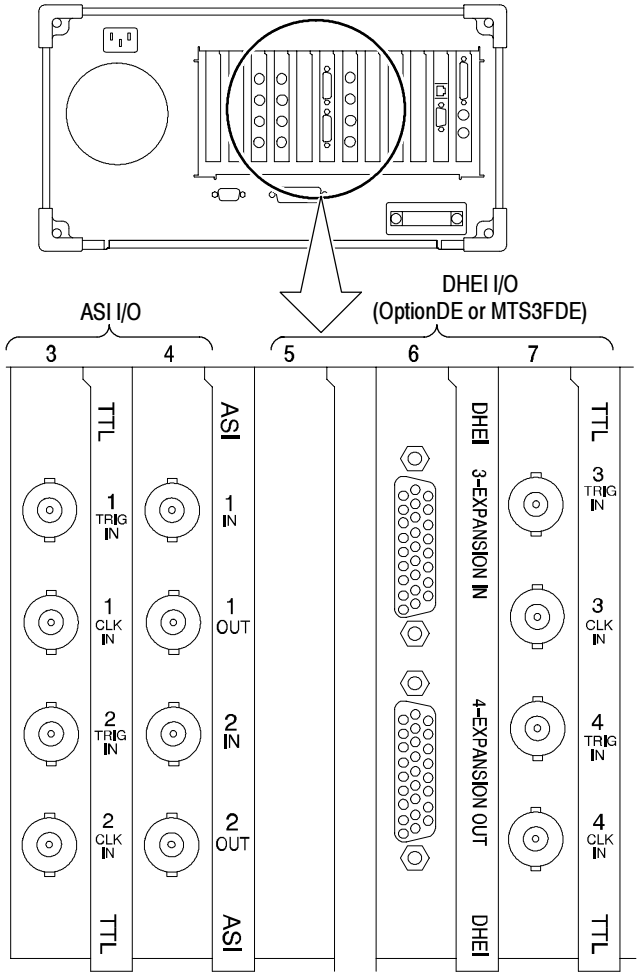


Figure 1-7: ASI and DHEI inputs and outputs

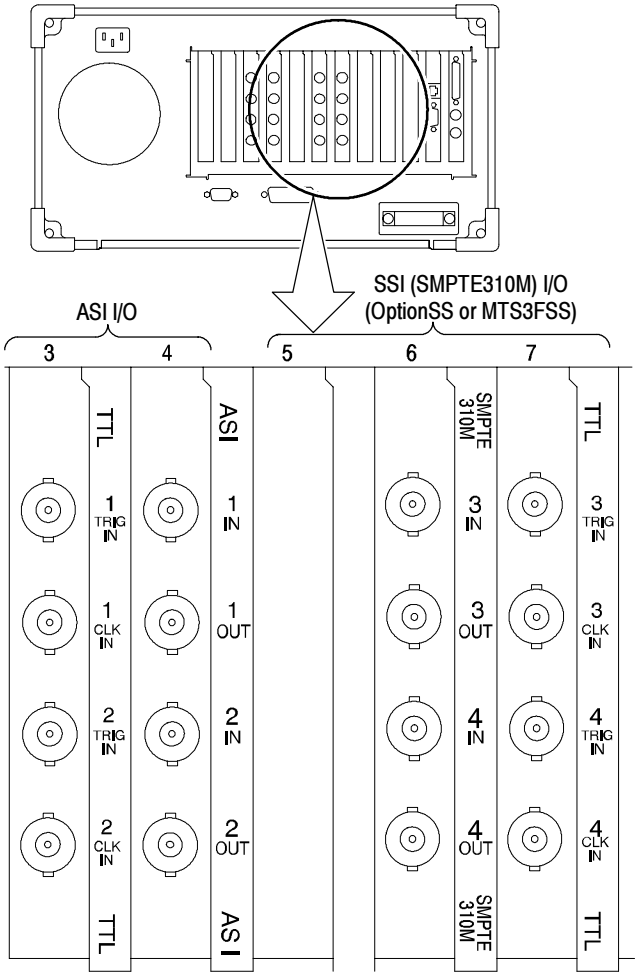


Figure 1- 8: ASI and SSI iputs and outputs

Repackaging for Shipment

The test system is shipped in cartons designed to protect the instrument. If you ship the instrument use these cartons, spacer pads, protective bag, and instrument support inserts to provide adequate protection.

If an instrument is to be shipped to a Tektronix field office for repair, attach a tag to the instrument showing the following:

- Owner's name and address
- Serial number
- Description of the problem(s) encountered and/or service required.

CAUTION. *To prevent the loss of your instrument's warranties, Tektronix strongly recommends that you use a test system shipping carton (one that is in good condition) when you ship your instrument to another location or when you return the instrument to a Tektronix service center for repair.*

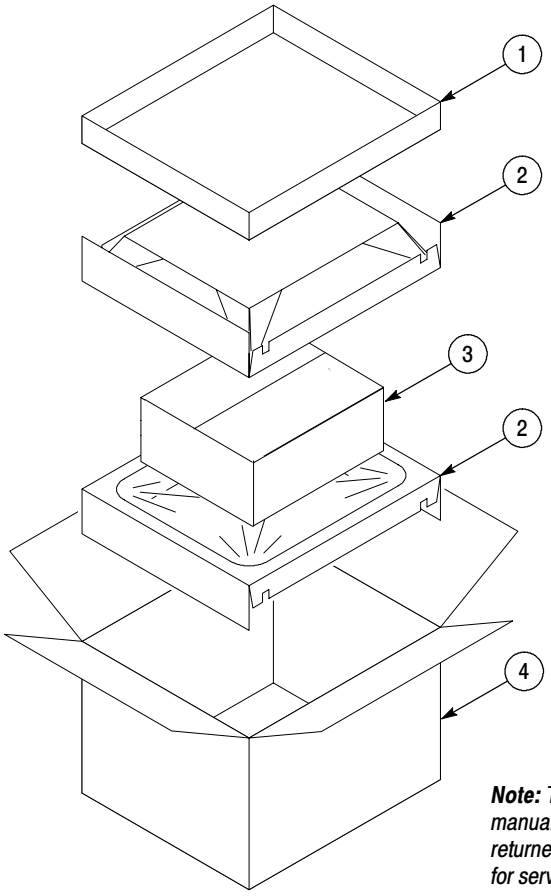
Tektronix cannot honor the instrument's warranties if the MTS300 system arrives at the service center damaged and it was not shipped in its original carton or in a replacement carton (and its supporting packaging material) purchased from Tektronix. If you lose your original packaging material, contact your Tektronix representative to obtain replacement packaging. Table 1–8 lists the part numbers to use when ordering replacement parts.

Replacement Packaging

New packaging material is available from Tektronix. The packaging part numbers are shown in Table 1–8. Packaging components are shown in Figure 1–9. Each component of the illustration has an index number, which also appears in Table 1–8. To obtain these items, contact your nearest Tektronix office or representative.

Table 1-8: Packaging material

Item	Tektronix part number	Figure 1-9 Index number
Complete shipping carton (contains all subparts)	710-9423-00	
Top tray (cardboard insert)	004-4912-00	1
Instrument support inserts (2); top and bottom	004-4913-00	2
Inner shipping box (without internal subparts)	004-4926-00	3 (See Figure 1-10)
Outer shipping box (without internal subparts)	004-4914-01	4
Spacer pad (makes two pads for inner shipping box)	004-4925-01	See Figure 1-10
Accessory tray	004-4851-00	Not shown
Accessory tray	004-4852-01	Not shown
Protective bag	006-8164-00	Not shown



Note: *The keyboard, mouse, and manual boxes do not need to be returned with the MTS300 system for servicing.*

Figure 1-9: Repackaging the MTS300 MPEG Test System

Repackaging Instructions

When the MTS300 system is shipped, it is important to package it well to protect the instrument. Figure 1–10 shows how to repackage the test system for shipment. It is not necessary to have the accessories received with the MTS300 system in the package for reshipment to repair. If you are shipping to another site for reinstallation, the accessories are packed last in accessory trays at the top of the box.

The inner shipping box, pads, and protective bag provide the necessary protection to allow the shipping materials of the outer shipping box to correctly support the product for shipment. Pack the inner shipping box as follows:

1. If you have the original packaging material, start by placing one of the spacer pads in the bottom of the inner box. Position the side of the pad with the smaller, square holes against the side of the box as shown in Figure 1–10.
2. Place the protective front cover on the front of the MTS300 MPEG Test System.

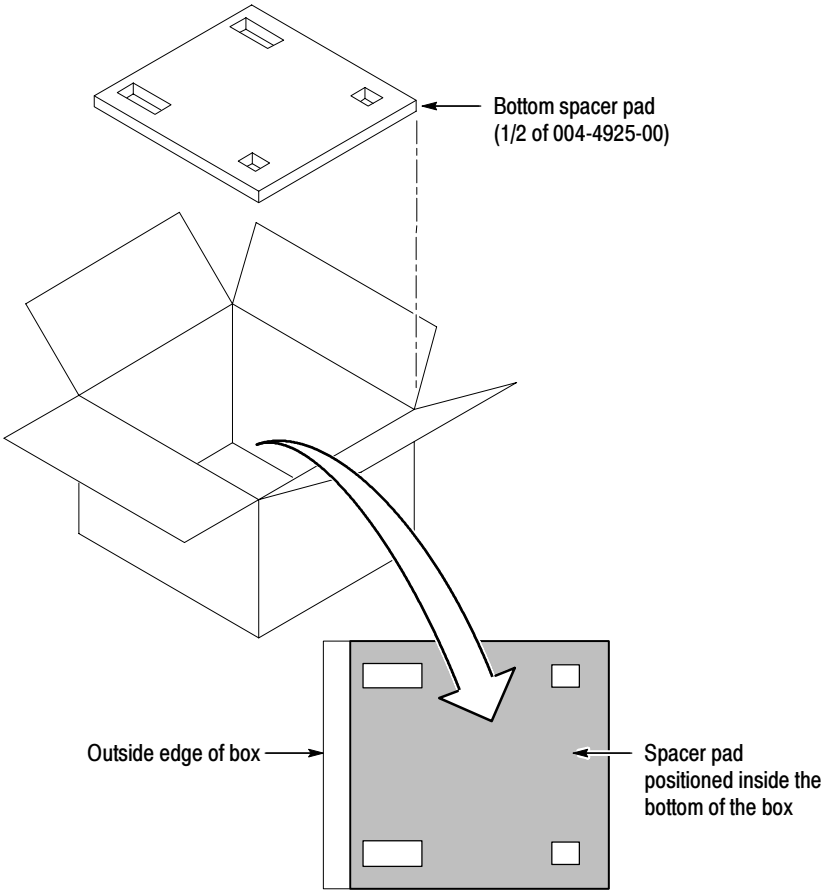


Figure 1-10: Placement of bottom spacer pad in inner shipping box

3. Place the MTS300 system in the protective bag. The bag prevents dust, moisture, or other debris from entering the cabinet.
4. Fold the top of the bag neatly over the top of the MTS300 system to make it as flat as possible and seal with packing tape.
5. Place the bagged MTS300 system in the inner shipping box. The small feet on the bottom of the cabinet go in the square holes in the spacing pad and the larger feet near the front of the MTS300 system go in the larger rectangular holes. The bezel end of the cabinet fits over the edge of the spacer pad.
6. Place the other spacer pad on top of the MTS300 system. Place the side with the small square holes against the side of the box. The protective front cover on the bezel of the MTS300 system is not covered by the top spacer pad.
7. Close and tape the inner shipping box.
8. Place one of the support inserts in the bottom of the outer shipping box, film side up as shown in Figure 1–9.
9. Place the sealed inner shipping box in the center of the bottom support insert in the outer shipping box.
10. Put the second support insert over the inner shipping box, film side down.

***NOTE**. If you are using new packing material purchased from Tektronix, pre-stretch the film in the support inserts by pushing down firmly several times on the top support insert.*

---

11. Place the top tray in the box. If you are not shipping accessories with the test system, close and tape the outer shipping box.
12. When shipping the accessories, place the two accessory trays in the top tray, arrange the accessories in the trays, and then close and tape the outer shipping box.
13. Attach the appropriate shipping documents needed to ship the MTS300 system to its destination (either to Tektronix for repair or to another location).

First Time Operation

First Time Operation

This section contains information for first-time operators about starting and shutting down the MTS300 system. A functional check procedure is provided to verify basic instrument operation.

Starting the MTS300 System

Perform the following procedure to power on the MTS300 system:

1. Connect the power cord to the rear-panel power connector.
2. Press the **On/Stby** switch to power on the instrument. Figure 2–1 shows the switch location.

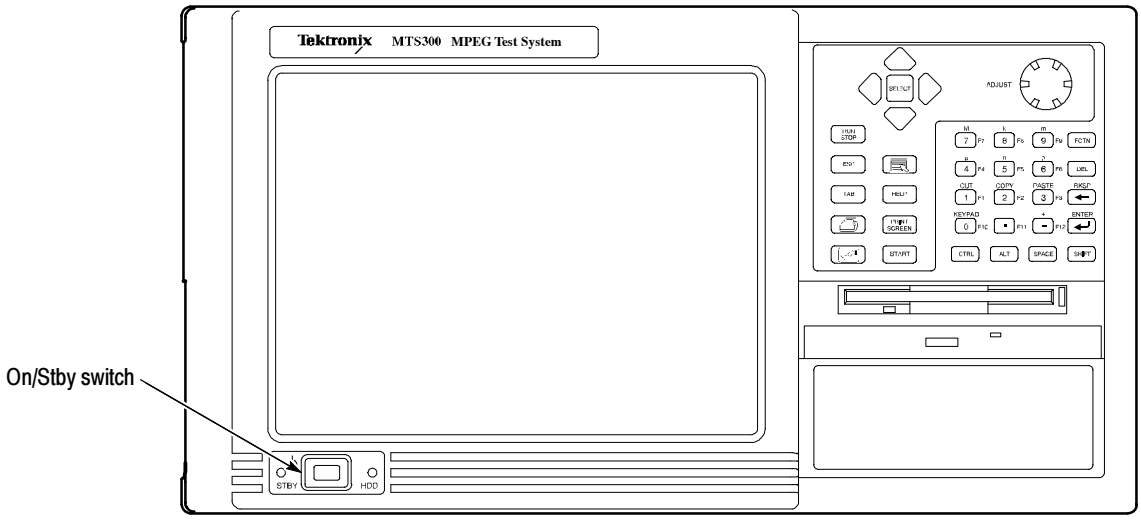


Figure 2-1: On/Stby switch

3. The Windows NT initialization process takes up to two minutes. Under normal circumstances, no action is required until the Begin Logon message appears.
4. When the Begin Logon message appears, simultaneously press the **CTRL + ALT + Delete** keys to open the Logon Information dialog box.

Logging On

The MTS300 system uses the Windows NT auto-logon feature by default. The default user name and password are `Administrator` and `MPEG2`, respectively. You do not need to enter a user name or password to log on to the MTS300 the first time.

Changing the Passwords. After you log on to the MTS300 system the first time (or at any subsequent time), you can change the password for that user name, or create new profiles for different users of the test system. Refer to the Windows NT online help for instructions.

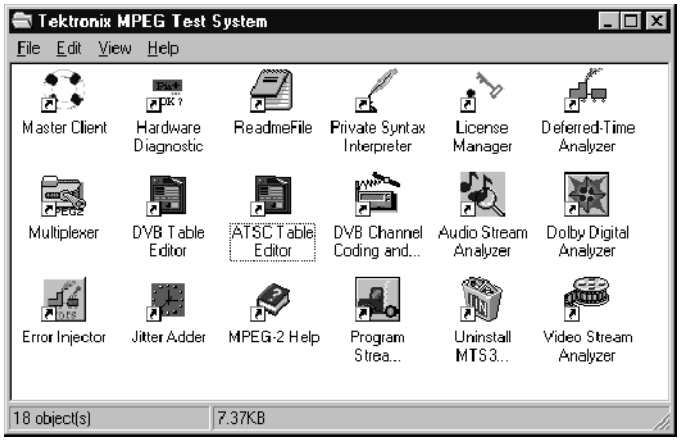
Refer to *Setting, Reseting, and Disabling Auto Logon* on page 4–11 if you want to disable automatic logon to Windows NT when you power-on the instrument.

CAUTION. *To prevent the loss of data, if you change the default user names and passwords, secure the new names in a safe place. If you forget your user-defined user names and passwords and cannot logon to the MTS300 system, you will have to reinstall the operating system software which will result in the loss of all data on the hard drives of the MTS300 system.*

Starting MTS300 System Applications

After you have logged on, the Tektronix MPEG Test System program group window appears as shown below. Double-click the appropriate application icon to launch the desired application.

NOTE. *The example below shows an MTS300 system program group with most of the available options installed. Depending on which options you ordered, your program group may not contain all application icons.*



General License Password

When you first receive your MTS300 system, the General License password is already isntalled. You will have to reenter the General License password only when you restore the MTS300 operating system software.

Refer to *Software Repair and Recovery* on page 4–1 for information about repairing system software or resetting system parameters. The procedure for entering the General License password starts on page 4–29.

Enabling the OpenMux Demonstration Period

If you ordered Option OM with your MTS300 system, the OpenMux server starts automatically with the rest of the MPEG Analysis Services, and you can ignore this section. If you did not order Option OM, you can enable the OpenMux server and client application for a thirty day demonstration period at any time using the following procedure. Performing this procedure will also clear the *Failure in socket connection* error message that appears when you try to connect the OpenMux server to the local Server Manager without a valid license password.

***NOTE**. Once the demonstration period begins, it lasts for 30 consecutive days and then ends. You cannot start, stop, and restart the demonstration period.*

Also note that the demonstration license enables all MTS300 applications for the same thirty day demonstration period. So, you cannot enable one application for a thirty day period and then enable other applications for a subsequent thirty day period.

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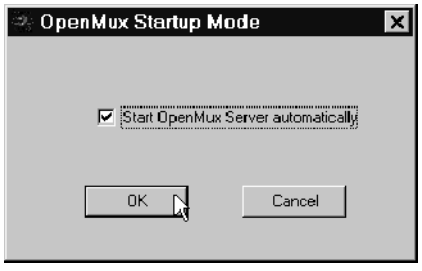
1. Double-click the **OpenMux Mode.exe** file located in the `C:\MTS300\Bin` directory.
2. Click the **Start OpenMux server automatically** option and then click **OK** as shown below.



3. Reboot the test system and enter the demonstration license password that shipped with the MTS300 test system when prompted to do so.

Disabling the OpenMux Server Startup

If you enabled the demonstration period for the OpenMux server and you want to remove the message that appears at startup after the demonstration period is over, use the following procedure:

1. Double-click the **OpenMux Mode.exe** file located in the `C:\MTS300\Bin` directory.
2. Clear the **Start OpenMux server automatically** option and then click **OK**.
3. Reboot the test system.

Shutting Down the MTS300 System

This section contains information about how to exit MTS300 system applications and how to shutdown the MTS300 system.

Exiting MTS300 System Applications

To exit an MTS300 system application, select **Exit** or **Quit** from the File menu or click the close button in the upper-right corner of the application window.

Shutting Down the MTS300 System

There are three methods to shut down the MTS300 system: standard power down, soft power down, and hard power down. For the standard and hard power down methods, you should exit all MTS300 applications before shutting the instrument down.

CAUTION. *To prevent data loss, exit all open MTS300 applications before powering down the instrument. Some applications will prompt you to save unsaved data before exiting. If you do not close all MTS300 applications before exiting Windows NT, you may lose data.*

Standard Power Down. To power down the MTS300 system during normal instrument operations, perform the following standard Windows NT power down procedure:

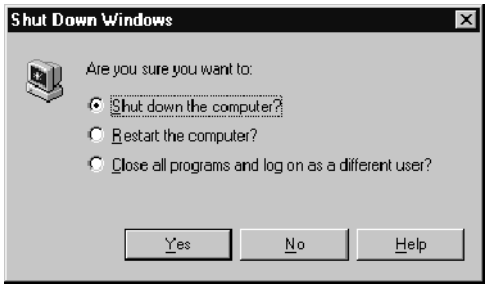
1. Exit all open MTS300 applications.

CAUTION. *To prevent data loss, exit all open MTS300 applications before powering down the instrument. Some applications will prompt you to save unsaved data before exiting.*

2. After the MTS300 applications are closed, shut down Windows NT by selecting **Shut Down** from the Windows NT Start menu as shown below.

CAUTION. *To prevent data loss and possible system problems during subsequent Windows NT initializations, always exit Windows NT before you power down the MTS300 system. Wait until the message "It is now safe to turn off your computer" appears before you press the On/Stby switch.*

3. Select **Shut down the computer?** in the resulting Shut Down Windows dialog box shown below, and then click **Yes**.



4. After the Shutdown Computer window appears with the message "It is now safe to turn off your computer," press the **On/Stby** switch to put the MTS300 system into standby mode.

5. After the MTS300 system goes into standby mode, you can restart the instrument by pressing the On/Stby switch.

6. To completely remove power to the instrument, disconnect the power cord at the rear panel.

Soft Power Down. The MTS300 system is shipped from the factory with a soft power-down capability enabled. The soft power-down capability allows you to directly exit Windows NT without closing the MTS300 applications first. Using this technique, the MTS300 system will automatically close all open applications and put the instrument into standby mode.

To soft power-down the MTS300 system, perform the following steps:

1. Press and release the **On/Stby** switch to initiate the soft power-down process. Some applications will prompt you to save unsaved data before exiting.
2. After the MTS300 system goes into standby mode, you can restart the instrument by pressing the On/Stby switch.
3. To completely remove power to the instrument, disconnect the power cord at the rear panel.

Hard Power Down. You can use the hard power-down capability to immediately power-down the MTS300 system in an emergency situation such as fire.

CAUTION. *To prevent data loss and the corruption or deletion of application and system files, do not perform this procedure. Use the following procedure only if all other attempts to shut down the MTS300 system have failed.*

Using this hard power down procedure will likely cause file problems. When you use this method to power down the MTS300 system, the next time the instrument is powered on, the operating system will use the Scan Disk utility to perform a check for missing or corrupt files. You may be prompted to reinstall the operating system or application software.

To hard power-down the MTS300 system, perform the following steps:

1. Press and hold the **On/Stby** button for about 3 or 4 seconds.
2. After the MTS300 system goes into standby mode, you can restart the instrument by pressing the On/Stby switch. Read the power-on messages for information about possible missing or corrupted files.
3. To completely remove power to the instrument, disconnect the power cord at the rear panel.

Functional Check

I/O Test System

Use the following procedure to verify the hardware components, Stream Recorder, Stream Player, and real-time analysis basic function.

Initial Setup

1. Connect all the inputs to the corresponding outputs as shown in Figure 2–2. (Your rear-panel configuration may differ slightly from the illustration.) For the BNC connectors, use 75 Ω cables.

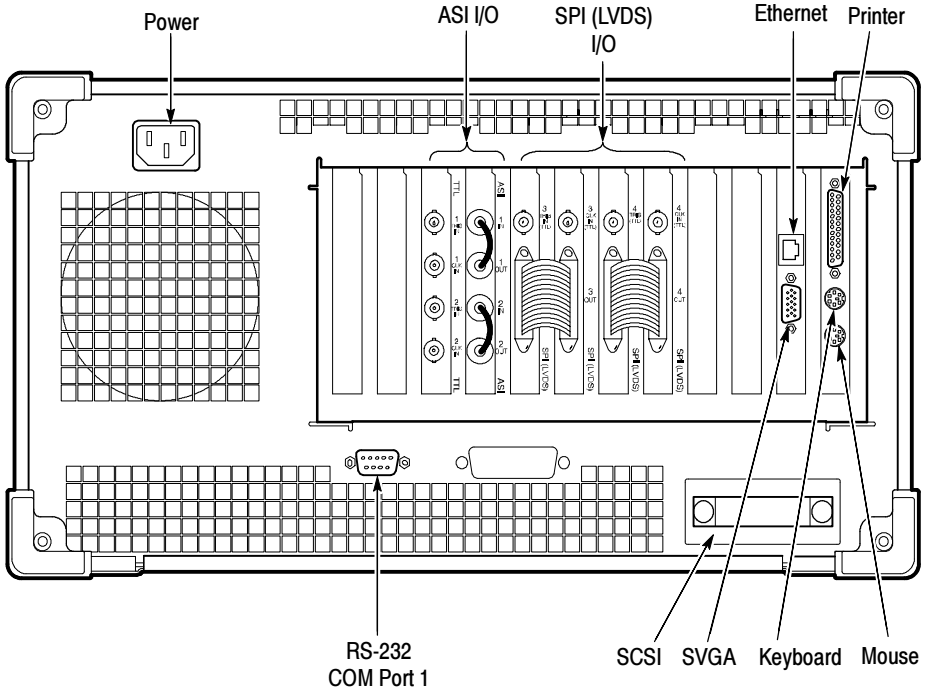


Figure 2-2: Initial equipment setup

2. Power up and log on to the MTS300 system.
3. Once you have correctly logged on, double-click the Tektronix MPEG Test System program group icon on the desktop.
4. The Tektronix MPEG program group window similar to that shown in Figure 2–3 on page 2–8 will be displayed.

Verify the Performance of Hardware Components

Each test system is shipped with a Hardware Diagnostic application that verifies the performance of the hardware components of the MTS300 system. Using this tool, you check the following parameters:

- Board access
- Process paths
- Stream paths
- I/O parameters
- External connections
- Trigger and Clock

Diagnostic Self Test

1. Start the Hardware Diagnostic by double-clicking the **Hardware Diagnostic** icon in the Tektronix MPEG Test System program window.

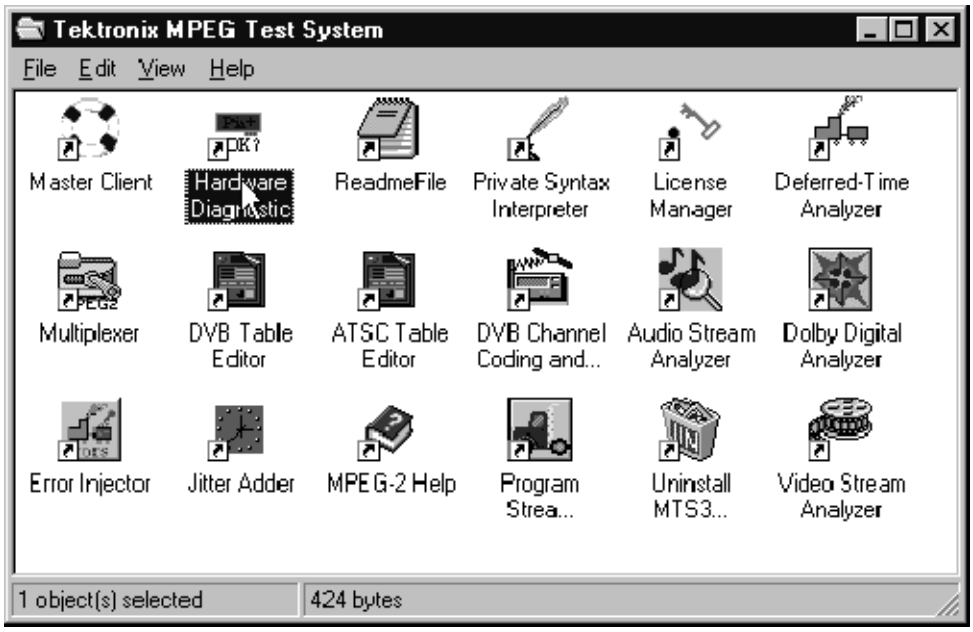


Figure 2- 3: Tektronix MPEG Test System program window

2. Initially, the Hardware Diagnostic window is blank as shown in Figure 2-4. To start the diagnostic, you must first connect to the MTS300 local Server Manager.

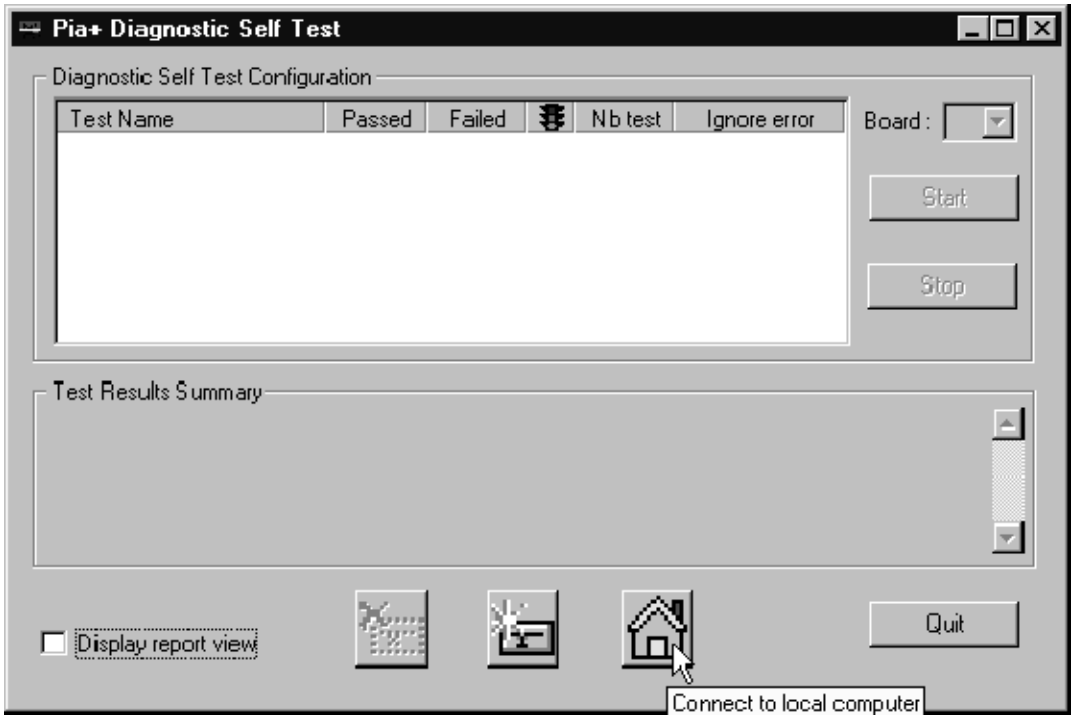


Figure 2-4: Connect to local Server Manager

3. Select the tests to be performed by clicking the appropriate boxes under **Test Name** as shown in Figure 2–5. Select all boxes for this initial diagnostic test.
4. Select Display Report View.
5. Click **Start**.

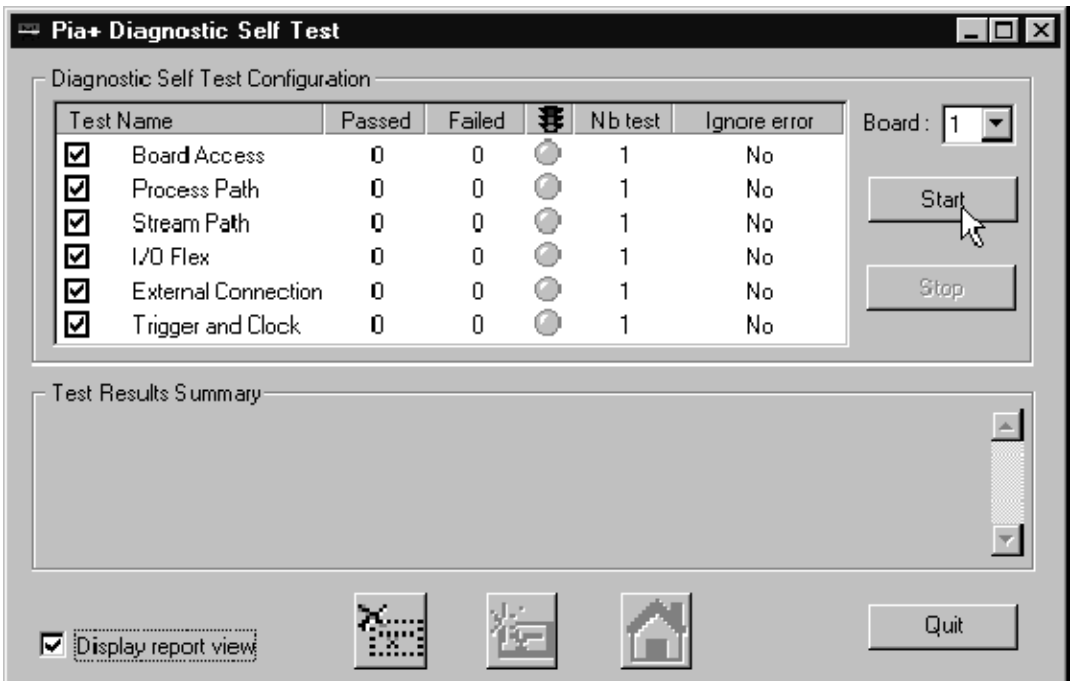


Figure 2-5: Start the testing routine

6. The following message is displayed. Click **Yes** to begin the routine.

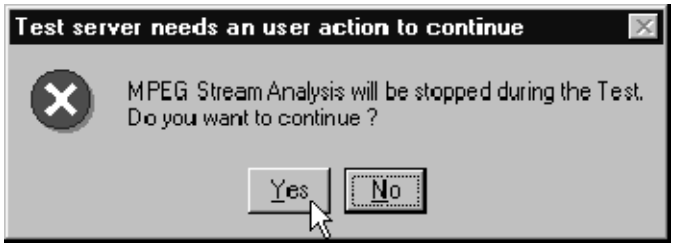


Figure 2-6: Begin the self test routine

7. As the routine continues, the display records the results as shown in Figure 2–7.

The Diagnostic Self Test Configuration area indicates which tests are being performed and the progress of each test:

- A yellow LED icon indicates the test is in process.
- A green LED icon indicates that the test is completed and passed.
- A red LED icon indicates that the test failed, and the self test stops.

The Test Results Summary area displays a summary of each test checked in the test control area. This section updates with a summary of the test results when all tests for that set of diagnostics has been performed.

The Report View area records details about each test as it is being performed.

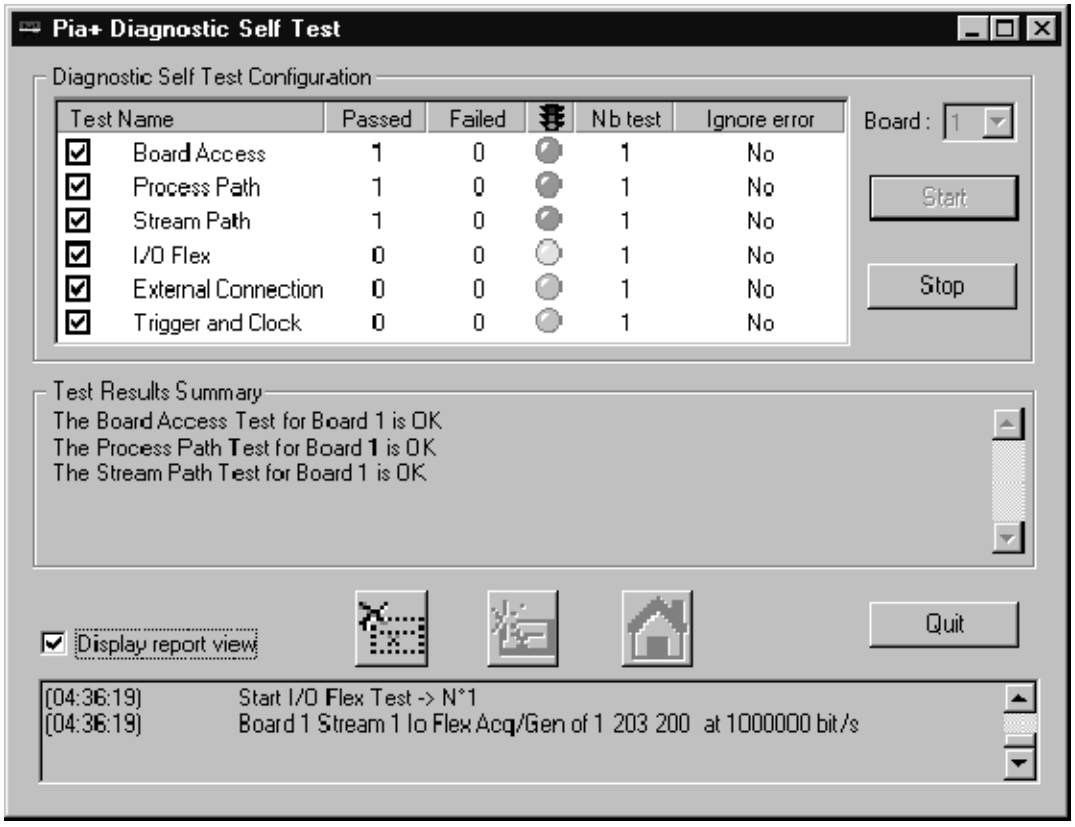


Figure 2-7: Window showing sample test results summary

8. If the corresponding input and output connections have not been made as shown in Figure 2–2 on page 2–7, the routine will stop at the beginning of the **External Connection** test and the following message will appear.

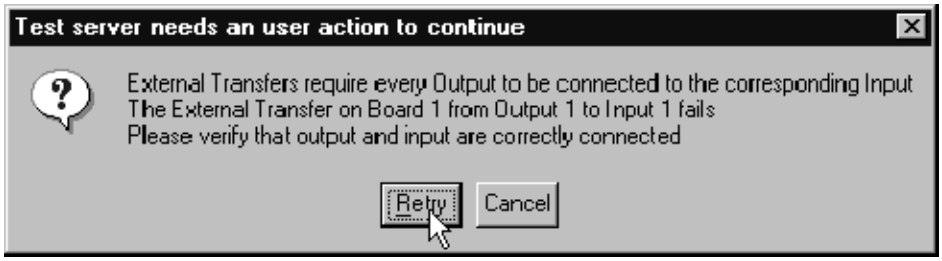


Figure 2- 8: Message box with connection requirements

9. Connect the cabling as prompted by the message box. To continue the routine click **Retry** once the connection has been made.

NOTE*. If you connect all the I/O's at this time each I/O test will be performed without interruption. If you connect only one, then the message will appear at the conclusion of each test. Move the cable to the next I/O as prompted in the message box.*

Trigger and Clock

1. Connect the output from the signal generator to a Trigger input on the rear panel of the MTS300. Use a 50 Ω BNC coaxial cable to make the connection.

NOTE*. All input signals to the MTS300 must be at TTL levels and the trigger and clock inputs must come from 50 Ω sources.*

2. Follow the on-screen procedure.

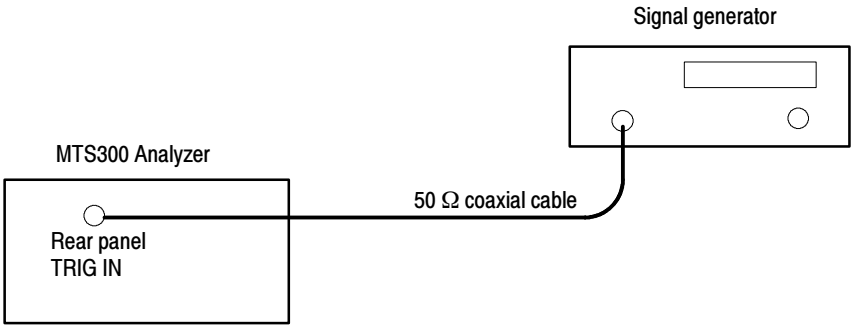


Figure 2-9: Connections for trigger test

3. Connect the output from the signal generator to a Clock input on the rear panel of the MTS300 and to a frequency counter. Use a BNC T-connector and a 50 Ω BNC coaxial cable to make the connection.

4. Follow the on-screen procedure.

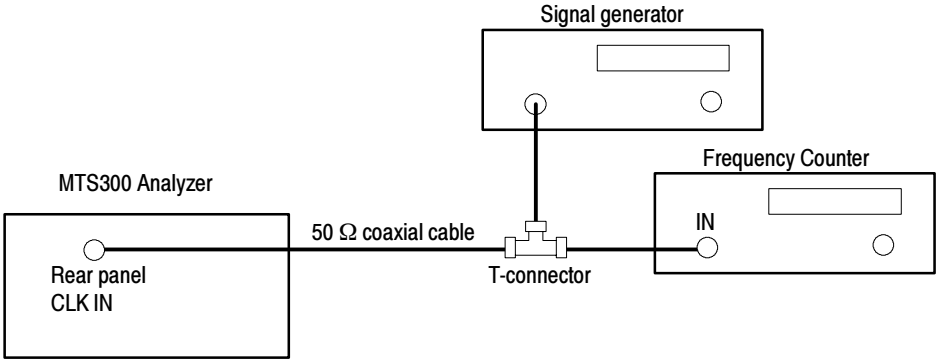


Figure 2-10: Connections for clock test

5. This concludes the Hardware Diagnostics. Click Quit to end the routine.

Monitoring an Input

1. Connect the input of I/O number one to the output of I/O number two as shown in Figure 2–11. Use a 75 Ω BNC cable to make the connection.

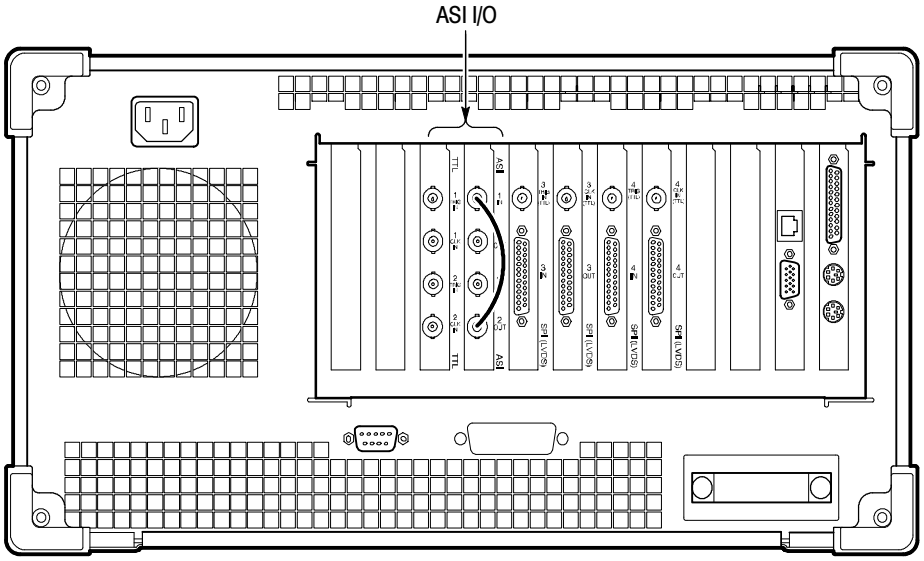


Figure 2- 11: ASI cabling

2. Start the Master Client by double-clicking the **Master Client** icon in the Tektronix MPEG Test System program window.

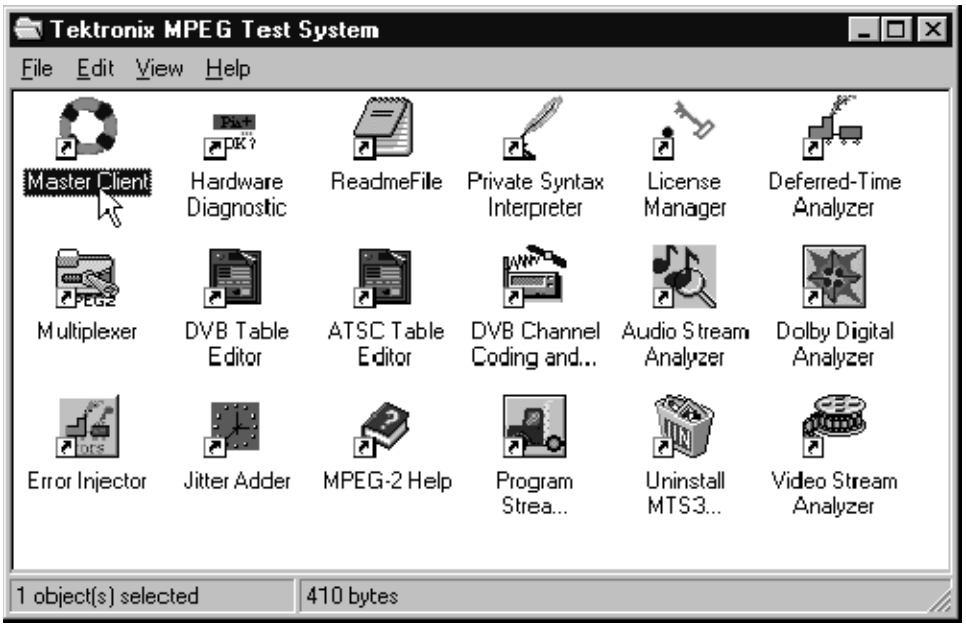


Figure 2- 12: Tektronix MPEG Test System program window

3. Initially, the Master Client window is blank as shown in Figure 2–13. To start monitoring an input, you must first connect to the local Server Manager.

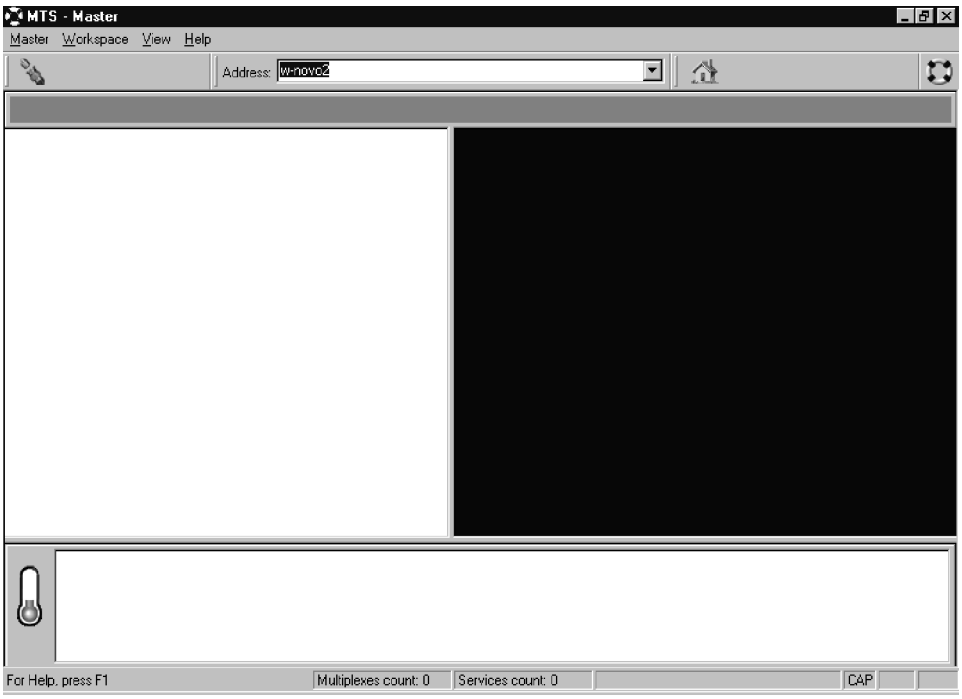


Figure 2-13: Initial Master Client application window

4. Connect to the local Server Manager by selecting **Master | Connect locally**.

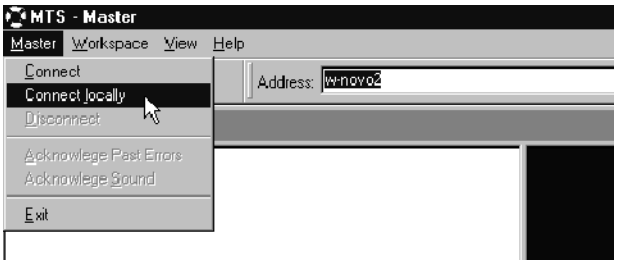


Figure 2-14: Connecting to the local Server Manager

5. Once you have connected to the local Server Manager, the Master Client appears as in Figure 2–15 with the I/O ports labeled Free in the Port Manager panel. You are now ready to assign the I/O ports to an Analysis Server and application.

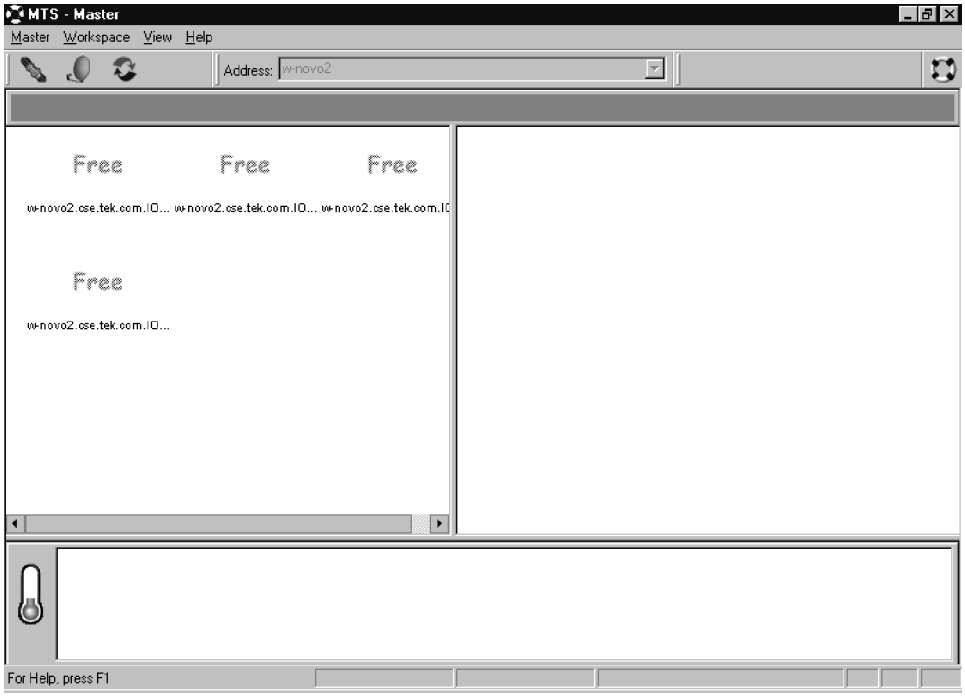


Figure 2- 15: Master Client window showing no assigned ports

6. Select I/O #1 in the Port Manager panel, right click, and then select **Assign Server | Analysis Server** from the shortcut menu.

Figure 2-16: Port Manager panel showing Analysis Server selected

7. Select I/O #2 in the Port Manager panel, right click, and then select **Assign Server | Stream Player** from the shortcut menu.

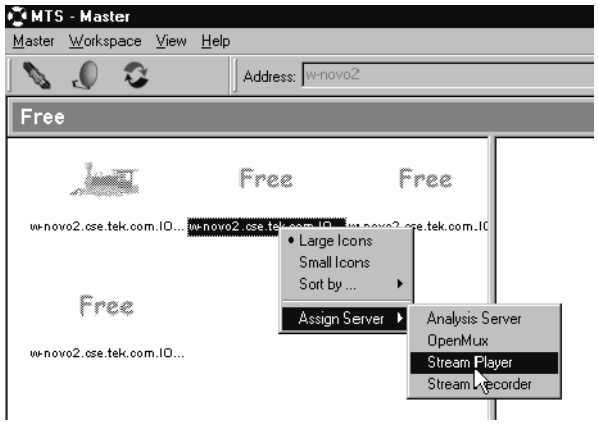


Figure 2-17: Port Manager panel showing Stream Player selected

8. Select the Stream Player icon (I/O #2), right click, and then select **Launch Stream Player Client** from the shortcut menu.

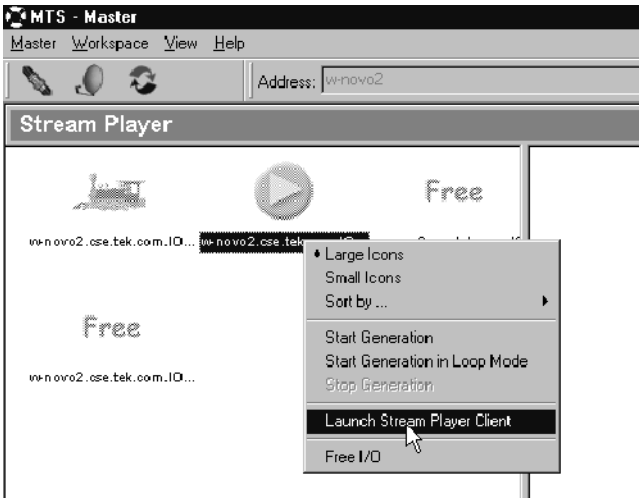


Figure 2- 18: Selecting Launch Stream Player Client

9. Click the **Browse** button to select a transport stream file (*.trp) from the MTS300 system hard drive.

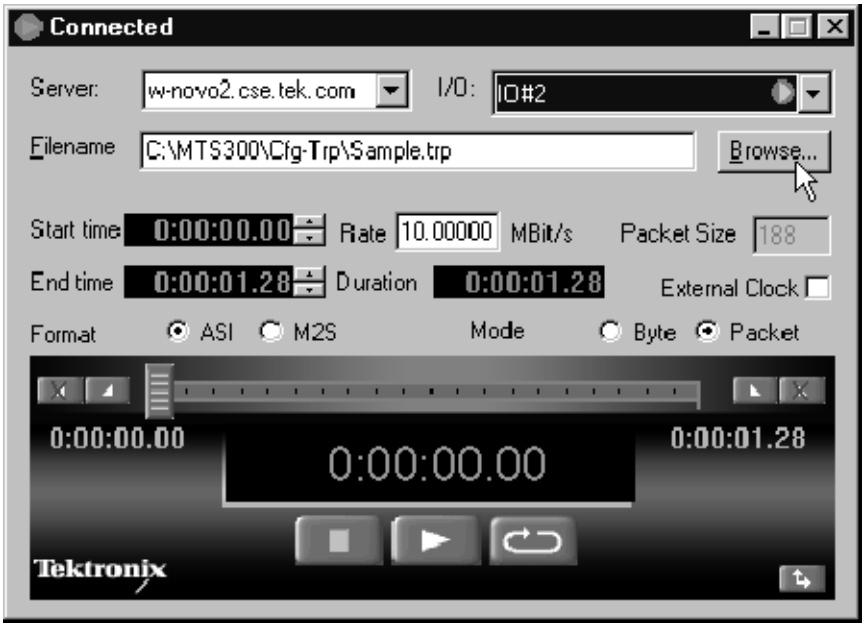


Figure 2- 19: Stream Player Application window

10. Browse to C:\MTS300\Cfg-Trp directory, and then highlight the *Sample.trp* file. Click **Open** to load the file into the Stream Player.

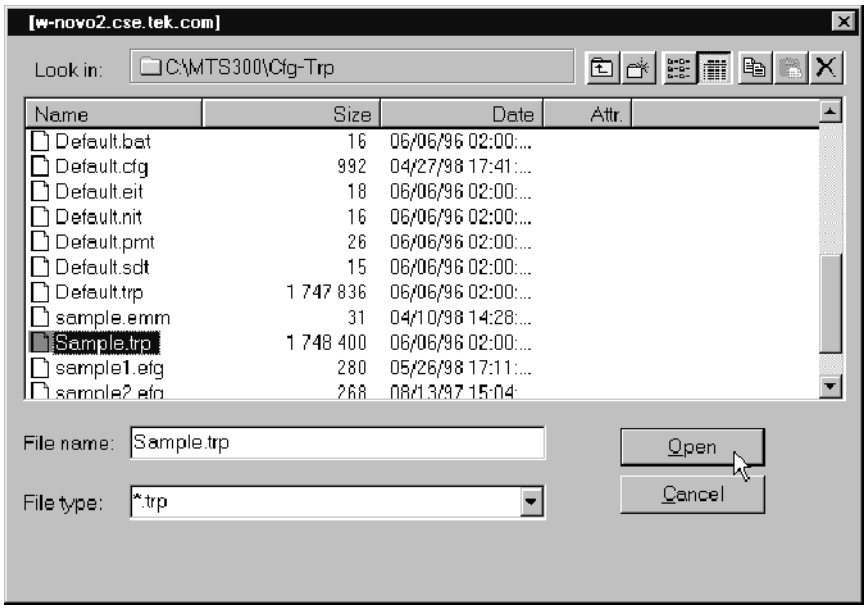


Figure 2-20: C:\MTS300\Cfg-Trp directory

11. Click the loop play  button in the Stream Player window to begin output of the transport stream. See also Figure 2–19.

12. Minimize the Stream Player application window.

13. Select the Analysis Server icon (I/O#1), right click, and then select **Start Analysis** from the shortcut menu.

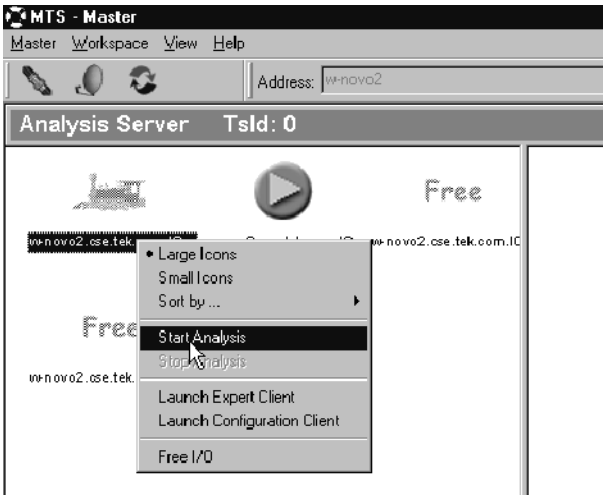


Figure 2-21: Starting transport stream analysis

14. After you start the analysis, an icon representing the service in the Sample.trp file appears in the Services panel.

Figure 2-22: Master Client in Analysis mode

15. Select the Analysis Server icon, right-click, and then select **Launch Expert Client**.

Figure 2-23: Launch Expert Client selected

16. The Expert Client applications window opens. A typical display is shown in Figure 2–24.

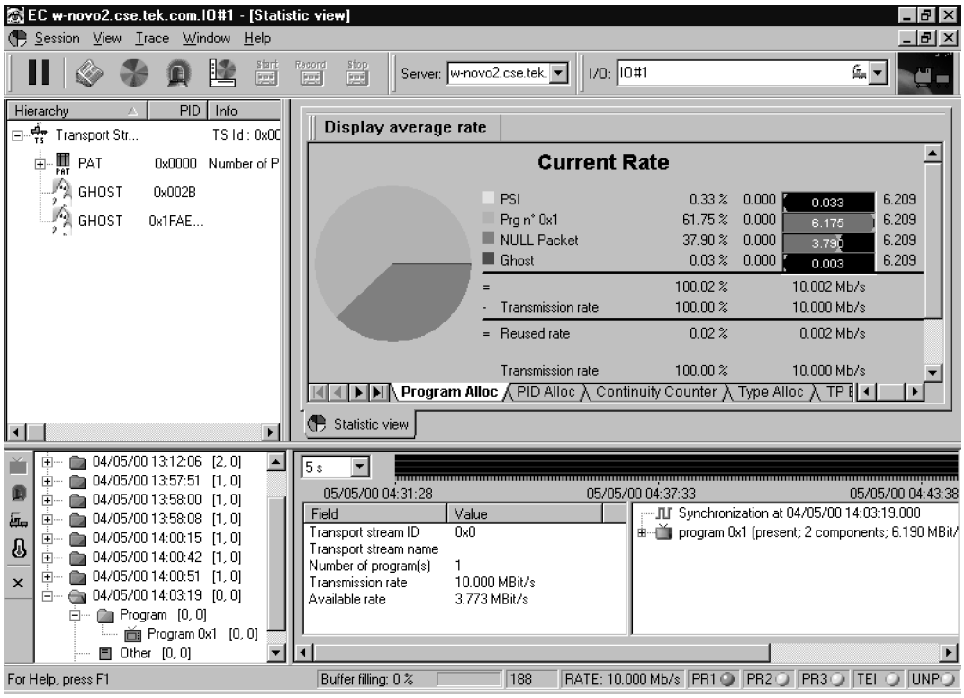


Figure 2-24: Expert Client application window

17. Verify proper operation.

- Check that stream is acknowledged on Port 1.
- Confirm that the Program Allocation pie chart correctly shows one program slices. (The PSI slice is too small to display.)

2nd I/O Pair Setup Procedure

1. Connect the output of I/O number one to the input of I/O number two as shown in Figure 2–25. Use a 75 Ω BNC cable to make the connection.

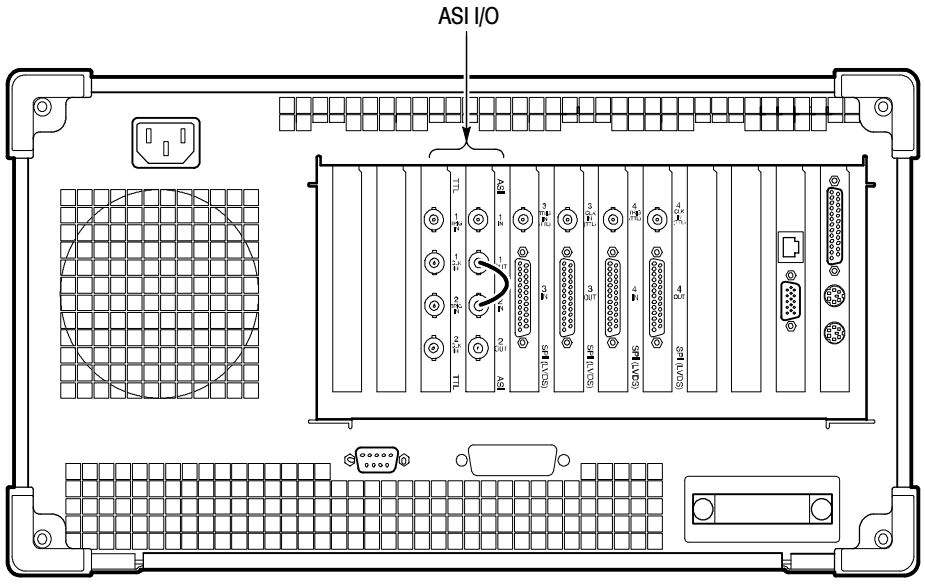


Figure 2-25: Setup for testing second input

2. Exit the Expert Client application window.

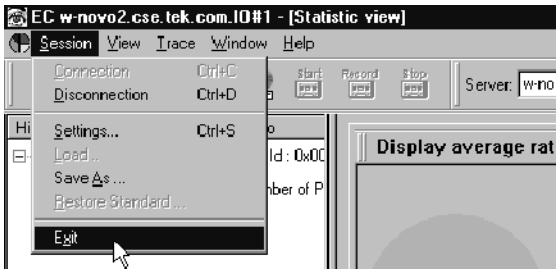


Figure 2-26: Exit Expert Client application

3. Select I/O #1 in the Port Manager panel, right click, and then select **Stop Analysis** from the shortcut menu.

4. Select I/O #1 in the Port Manager panel, right click, and then select **Free I/O** from the shortcut menu.

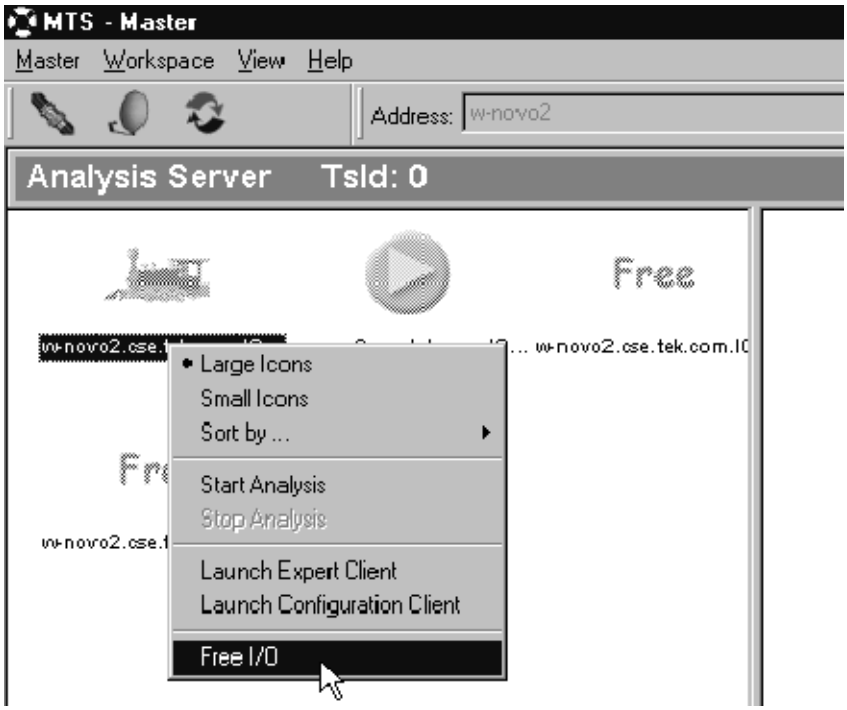


Figure 2-27: Release Analysis Server connection

5. Select I/O #2 in the Port Manager panel, right click, and then select **Stop generation** from the shortcut menu.
6. Exit the Stream Player Client application.
7. Select I/O #2 in the Port Manager panel, right click, and then select **Free I/O** from the shortcut menu.

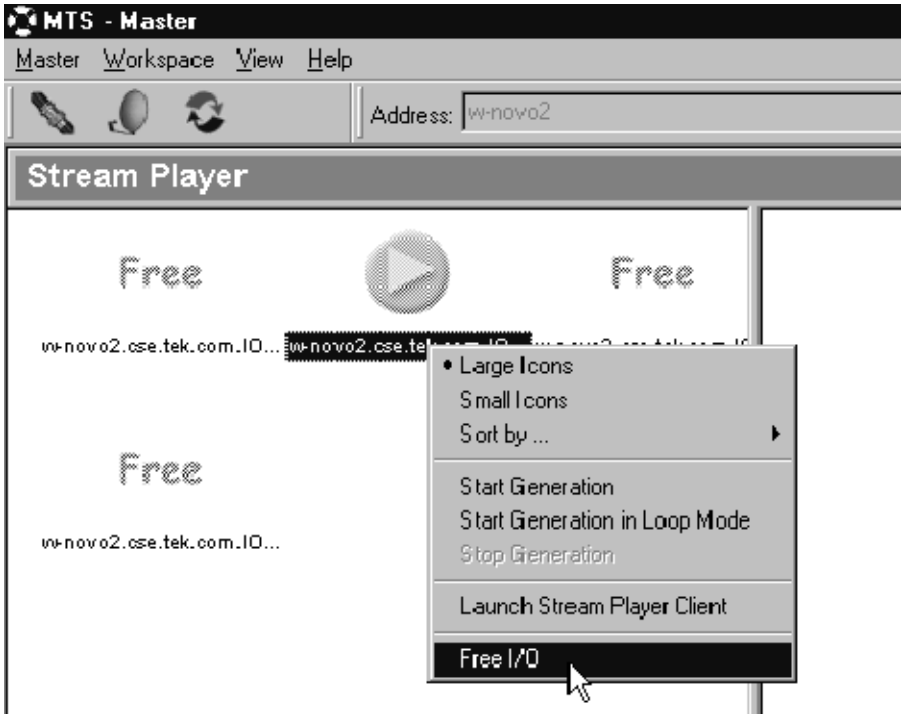


Figure 2- 28: Release Stream Player connection

8. Select I/O #2 in the Port Manager panel, right click and then select **Assign Server | Analysis Server** from the shortcut menu.

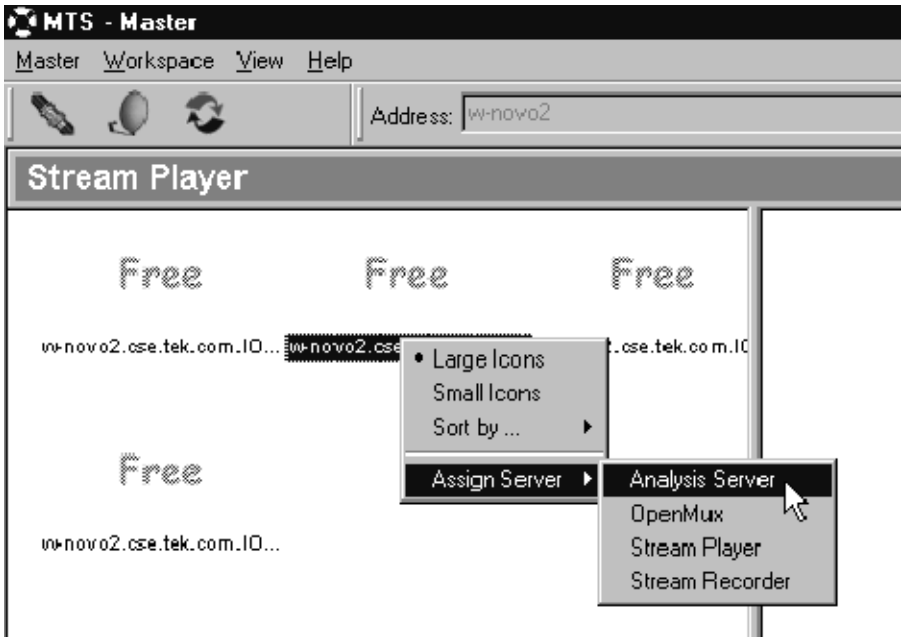


Figure 2-29: Port Manager panel showing Analysis Server selected

9. Select I/O #1 in the Port Manager panel, right click, and then select **Assign Server | Stream Player** from the shortcut menu.

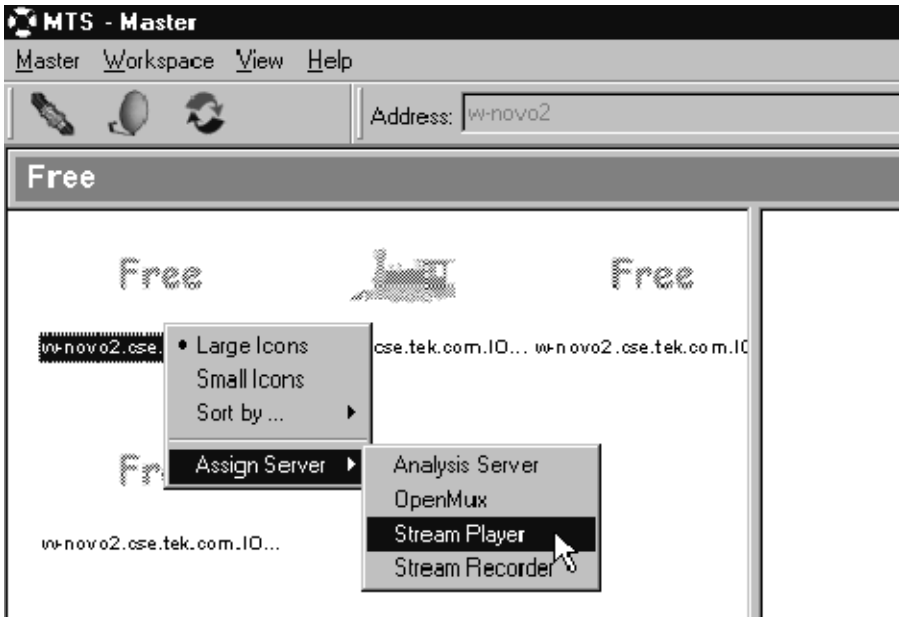


Figure 2- 30: Port Manager panel showing Analysis Server | Stream Player selected

10. Select the Stream Player icon (I/O #1), right click, and then select **Launch Stream Player Client** from the shortcut menu.

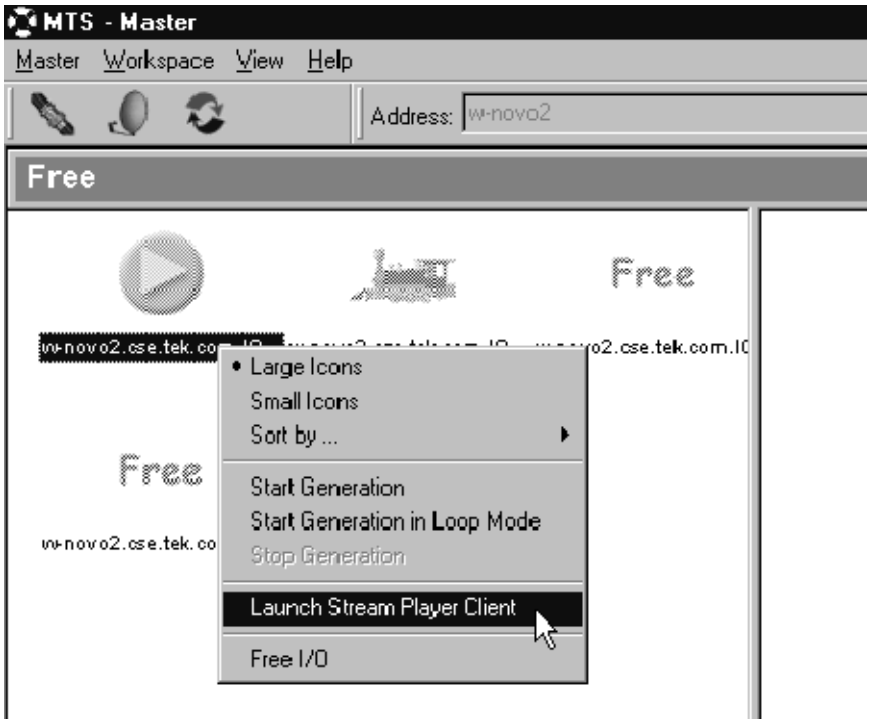


Figure 2-31: Selecting Launch Stream Player Client

11. Click the **Browse** button to select a transport stream file (*.trp) from the MTS300 system hard drive.

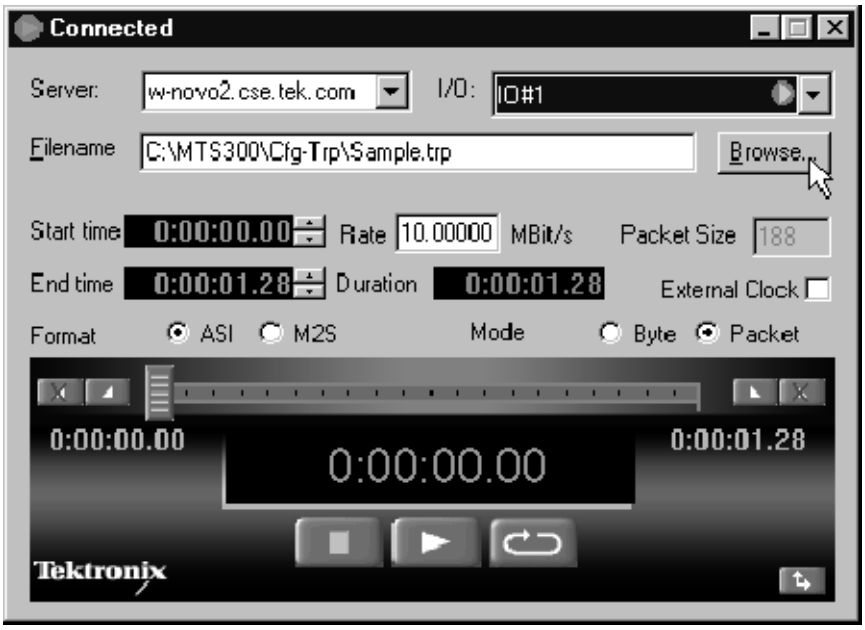


Figure 2-32: Stream Player Application window

12. Browse to C:\MTS300\Cfg-Trp directory, and then highlight the *Sample.trp* file. Click **Open** to load the file into the Stream Player.

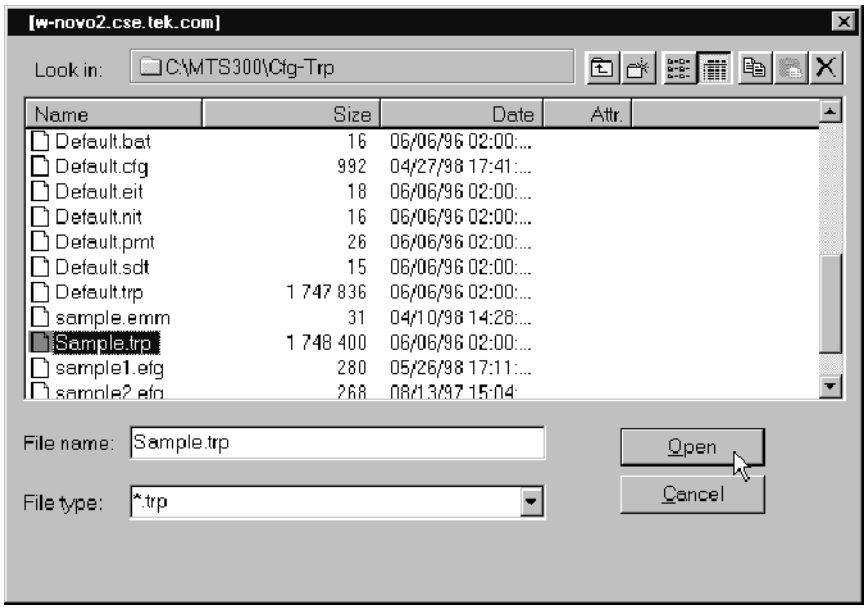


Figure 2-33: C:MTS300\Cfg-Trp directory

13. Click the loop play  button in the Stream Player window to begin output of the transport stream.

14. Minimize the Stream Player application window.

15. Select the Analysis Server icon (I/O#2), right click, and then select **Start Analysis** from the shortcut menu.

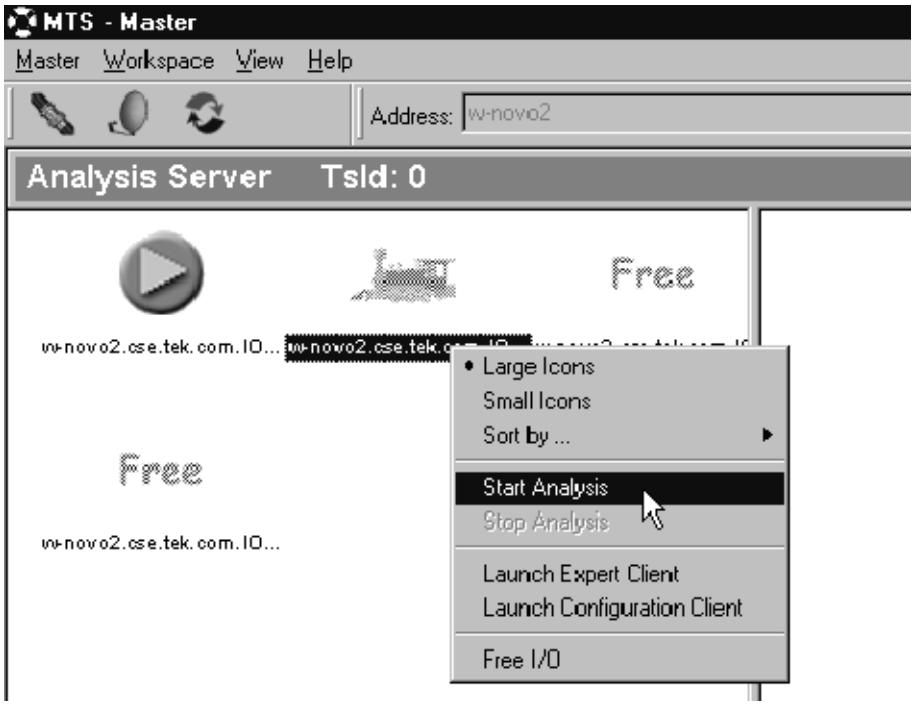


Figure 2- 34: Starting transport stream analysis

16. After you start the analysis, an icon representing the service in the Sample.trp file appears in the services panel.

Figure 2-35: Master Client in Analysis mode

17. Select the Analysis Server icon, right-click, and then select **Launch Expert Client**.

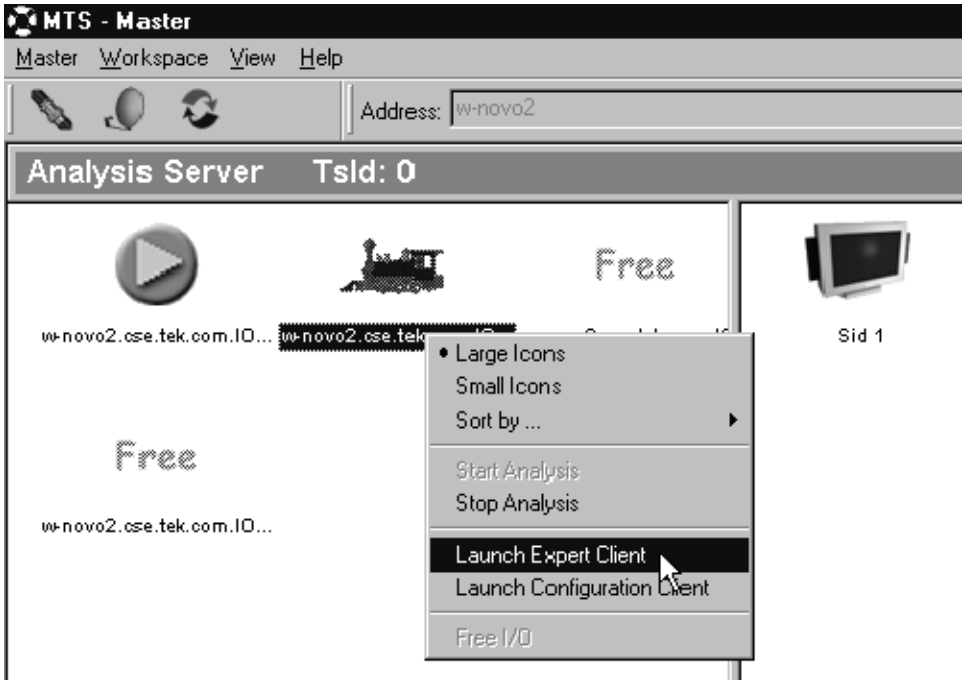


Figure 2-36: Launch Expert Client selected

18. The Expert Client applications window opens. A typical display is shown in Figure 2–37.

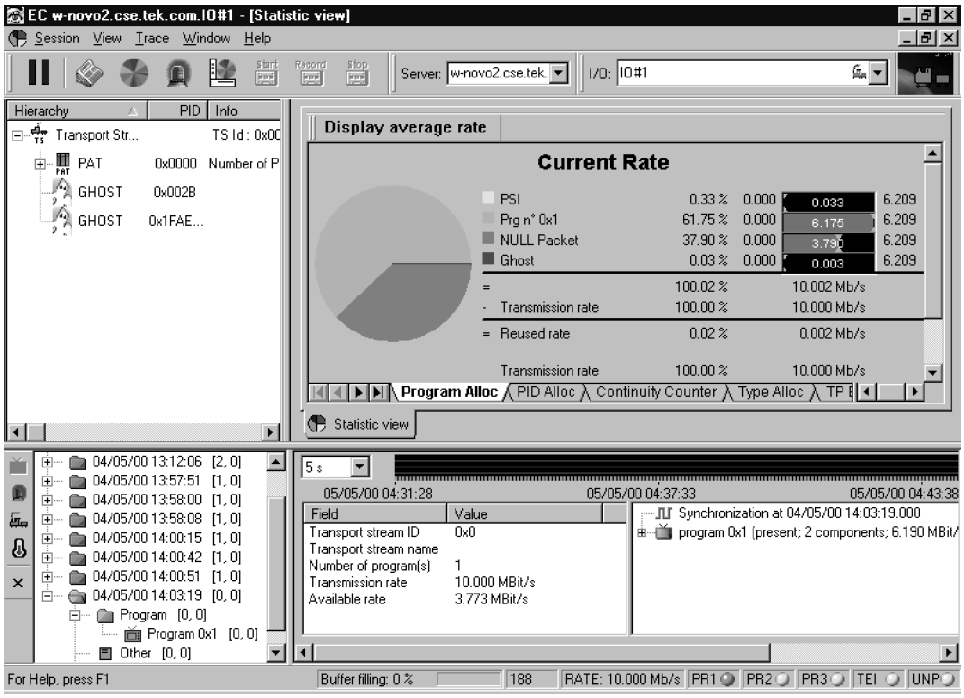


Figure 2-37: Expert Client application window

19. Verify proper operation:

- Check that stream is acknowledged on Port 2.
- Confirm that the Program Allocation pie chart correctly shows one program slice.

If the analyzer successfully checks Sample.trp, functionality of the Analysis Server, Stream Player Client and Stream Player Server, and the Expert Client is confirmed. If the program allocation display does not show the pie chart or report transmission rates correctly, switch the MTS300 system off and verify that the PIA+ board is firmly seated in the PCI connector (slot 4 of the test system card cage).

3rd and 4th I/O Pair Setup Procedure

1. If you have one of the I/O options installed, repeat the procedure that you have just completed for the remaining I/O pairs (I/O #3 and I/O #4).
2. Connect the input to the corresponding output. Figure 2–38 shows the connections using the rear panel with the SPI (LVDS) I/O option installed.

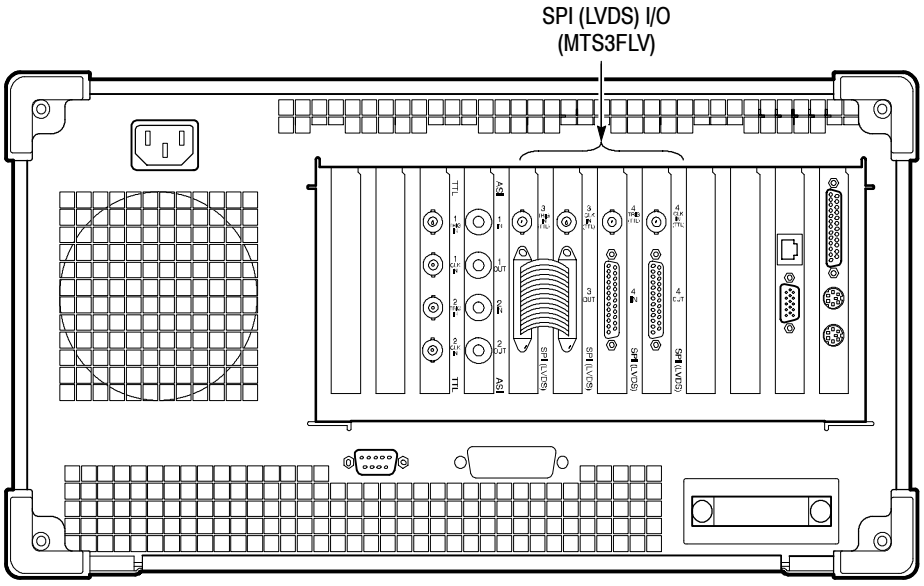


Figure 2- 38: Rear panel connections for I/O #3 test procedure

After a successful functional check, exit the Expert Client, Stream Player, and Master Client and shut down the test system.

Specifications

Specifications

This section lists the electrical, environmental, and physical specifications of the MTS300 system. All specifications are guaranteed unless labeled *typical*. Typical specifications are provided for your convenience and are not guaranteed. Electrical characteristics apply to test systems operating within the environmental conditions specified in Table 3–10.

To verify performance of the test system, use the procedures in the performance verification section of the *MTS300 MPEG Test System Service Manual*, an optional accessory. Contact your Tekronix representative for ordering information.

Monitoring Characteristics

MPEG Characteristics:

- Supports MPEG–2, DVB, and ATSC protocols.
  Monitors transport and multiplex errors.
- Monitors PSI, SI, and PSIP table syntax and consistency errors.
  Monitors transport signal for sync loss.
- Generates MPEG transport streams (including ATSC and DVB–SI).

Data Rate Characteristics:

- Up to 140 Mbps with one input or 240 Mbps total using 2 to 4 inputs.
  For example, Port 1 can run at 100 Mbps while port 2 is running at 140 Mbps for a total of 240 Mbps.

Number of Inputs:

- Standard Inputs: Two ASI/M2S input/output pairs
- Optional inputs: Two SPI (LVDS parallel), two SMPTE310M (SSI), or two DHEI (GI-Digicypher) input/output pairs.

Interface Platform Characteristics

Table 3-1: Platform characteristics

Characteristic	Description	Supplemental information
Operating system	Windows NT 4.0 (Service pack 6)	
Disk space	System: 10 GB MPEG Storage: 27 GB	
COM Port	RS-232	
Ethernet	10/100-base T; RJ45	
Mouse	Mini DIN	
Keyboard	Mini DIN	
SVGA	15-pin, High density, Sub-D	
RAM	256MB	
CD-ROM drive	8x	
Display	LCD, 800 x 600	
Character input	Touch screen and keyboard	
Printer Port	IEEE P1284	

I/O Port Electrical Characteristics

Table 3-2: ASI

Characteristic	Description	Supplemental information
Input Port (ASI/M2S)		
Connector	BNC	
Bit Rate	270 Mbps ±100 ppm	
Transport Stream Data rate	Maximum: 140 Mbps Minimum: 1 Mbps	
Signal Amplitude	Maximum: 800 mV_{p-p} Minimum:: 200 mV_{p-p}	
Termination	75 Ω nominal	
Return Loss	17 dBm minimum from 27 MHz to 270 MHz	
Output Port (ASI/M2S)		
Connector	BNC	
Bit Rate	270 Mbps ±100 ppm	

Table 3-2: ASI (Cont.)

Characteristic	Description	Supplemental information
Transport Stream Data Rate	Maximum: 140 Mbps Minimum: 1 Mbps	
Signal Amplitude	Maximum: 880 $mV_{p-p,}$ typical Minimum: 500 $mV_{p-p,}$ typical	
Termination	75 Ω	
Format	Can be configured as ASI Burst, ASI Packet, or M2S	
Rise and Fall times	1.2 ns maximum, typical	20% to 80%
External Clock Input Port		Clocks the stream player output byte rate
Voltage Levels	TTL Low: < 0.8 V. typical High: > 2.0 V, typical	
Termination	50 Ω resistive nominal	
Frequency Range	125 kHz to 17.5 MHz	
External Trigger Input Port		Initiates a capture of a transport stream input
Voltage Levels	TTL Low: < 0.8 V High: > 2.0 V	
Termination	50 Ω resistive nominal	

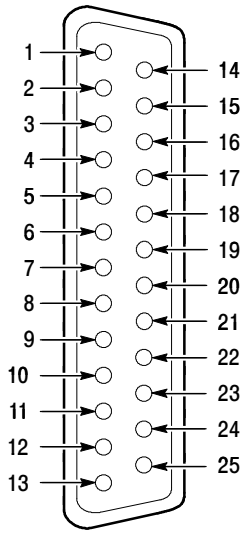
Table 3-3: SPI-LVDS parallel (Option MTS3FLV)

Characteristic	Description	Supplemental information
Input Port		See Table 3-4 on page 3-5 for pin descriptions. See Figure 3-1 on page 3-5 for the timing diagram.
Connector	25-pin sub D-type	
Data Rate	Maximum: 140 Mbps Minimum: 1 Mbps	
Signal Amplitude	LVDS	
Termination	100 Ω resistive nominal, line-to-line	
Timing reference	Rising edge of clock	

Table 3-3: SPI-LVDS parallel (Option MTS3FLV) (Cont.)

Characteristic	Description	Supplemental information
Clock-to-Data Timing	Data must be stable ±5 ns of rising clock edge	
Output Port		See Table 3-4 on page 3-5 for pin descriptions. See Figure 3-1 on page 3-5 for the timing diagram.
Connector	25-pin sub D-type	
Data Rate	Maximum: 140 Mbps Minimum: 1 Mbps	
Signal Amplitude (LVDS)	Maximum: 454 mV_{p-p}, typical Minimum: 247 $mV_{p-p,}$ typical	
Termination	100 Ω resistive nominal, line-to-line	
Signal Common-Mode Range (LVDS)	1.125 V to 1.375 V, typical	
External Clock Input Port		Clocks the stream player output byte rate
Voltage Levels	TTL Low: < 0.8 V High: > 2.0 V	
Termination	50 Ω resistive nominal	
Frequency Range	125 KHz to 17.5 MHz	
External Trigger Input Port		Initiates a capture of a transport stream input
Voltage Levels	TTL Low: < 0.8 V High: > 2.0 V	
Termination	50 Ω resistive nominal	

Table 3-4: LVDS parallel data pin connections

LVDS/ECL/RS422 parallel port	Pin	Function	Pin	Function
	1	DCLK	14	$\overline{\text{DCLK}}$
	2	Ground	15	Ground
	3	DATA 7	16	$\overline{\text{DATA 7}}$
	4	DATA 6	17	$\overline{\text{DATA 6}}$
	5	DATA 5	18	$\overline{\text{DATA 5}}$
	6	DATA 4	19	$\overline{\text{DATA 4}}$
	7	DATA 3	20	$\overline{\text{DATA 3}}$
	8	DATA 2	21	$\overline{\text{DATA 2}}$
	9	DATA 1	22	$\overline{\text{DATA 1}}$
	10	DATA 0	23	$\overline{\text{DATA 0}}$
	11	DVALID	24	$\overline{\text{DVALID}}$
	12	PSYNC	25	$\overline{\text{PSYNC}}$
	13	Shield		

$\overline{\text{Asserted Low}}$ differential signal.

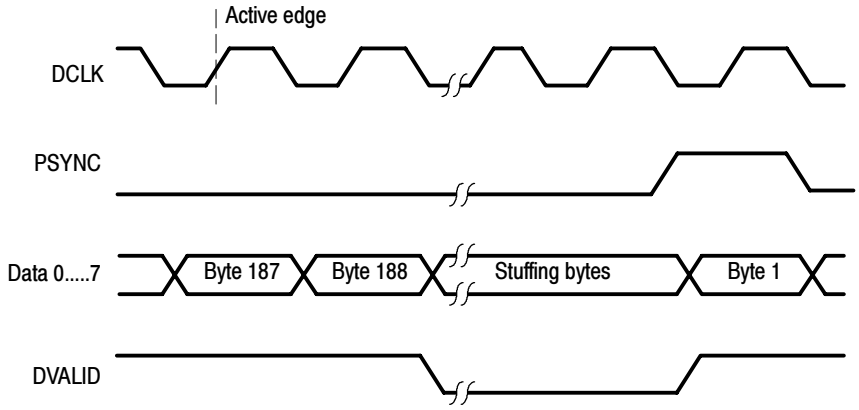


Figure 3-1: Parallel data timing, 188-byte packets

Table 3-5: SSI (Option SS)

Characteristic	Description	Supplemental information
SSI input (SMPTE310M)		
Connector	BNC, Female	
Input bit rate	19,392,658.5 bps ±1000 bps (typical) 38,785,316.9 bps ±1000 bps (typical)	
Synchronization	0x47	Synchronization will occur when the sync_byte is 0x47
Data format	Compliant with SMPTE310M	
Packet length	188 byte	
Signal amplitude	880 mV_{p-p}, maximum 720 mV_{p-p}, minimum	
Signal DC offset	±0.5 VDC, maximum	
Termination	75 Ω	
Return loss	–17 dB, 100 kHz to 77.6 MHz	
SSI output (SMPTE310M)		
Connector	BNC, Female	
Output bit rate	19,392,658.5 bps (nominal) or 38,785,316.9 bps (nominal)	Same as the input when the output is a loop through of the input
Data format	Compliant to SMPTE310M	
Signal amplitude	880 mV_{p-p} maximum 720 mV_{p-p} minimum	
Signal DC offset	±0.5 VDC, maximum	
Signal rise and fall times	0.4 ns minimum 5.0 ns maximum	Rise and fall times shall not differ by more than 1.6 ns, measured between 20% and 80%
Signal overshoot	10% of maximum signal amplitude	
Output impedance	75 Ω	
Return loss	–17 dB, 100 kHz to 77.6 MHz	

Table 3-5: SSI (Option SS) (cont.)

Characteristic	Description	Supplemental information
External Clock Input Port		Clocks the stream player output bit rate
Voltage Levels	TTL Low: < 0.8 V High: > 2.0 V	
Termination	50 Ω resistive nominal	
Frequencies	19.393 MHz 38.785 MHz	
External Trigger Input Port		Initiates a capture of a transport stream input
Voltage Levels	TTL Low: < 0.8 V High: > 2.0 V	
Termination	50 Ω resistive nominal	

Table 3-6: DHEI-Digicipher II

Characteristic	Description	Supplemental information
Expansion Input Port		
Connector	26-pin D, HD-22 Series	See Table 3-7 on page 3-9 for the pin descriptions
Data Rate	Maximum: 40 Mbps Minimum: 1 Mbps	
Signal Amplitude	ECL	
Termination	120 Ω resistive nominal, line-to-line	
Timing reference	Falling Edge of clock	
Clock-to-Data Timing	Data must be stable ±5 ns of falling clock edge	
Output Port		See Table 3-8 on page 3-10 for the pin descriptions
Connector	26-pin D, HD-22 Series	
Data Rate	Maximum: 40 Mbps Minimum: 1 Mbps	
Signal Amplitude	ECL	

Table 3-6: DHEI-Digicipher II (Cont.)

Characteristic	Description	Supplemental information
Termination	120 Ω resistive nominal, line-to-line	
External Clock Input Port		Clocks the stream player output bit rate
Voltage Levels	TTL Low: < 0.8 V High: > 2.0 V	
Termination	50 Ω resistive nominal	
Frequency range	1 MHz to 40 MHz	
External Trigger Input Port		Initiates a capture of a transport stream being input to the real-time analyzer
Voltage Levels	TTL Low: < 0.8 V High: > 2.0 V	
Termination	50 Ω resistive nominal	

Table 3-7: DHEI Expansion In pin connections

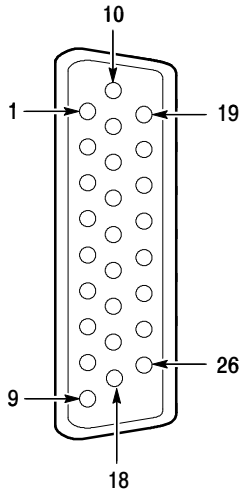
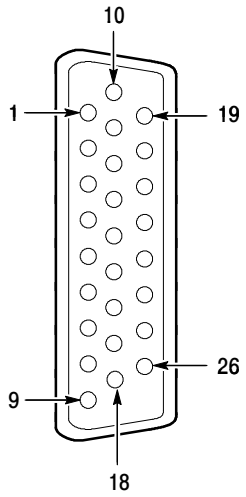
DHEI 26-pin connector	Pin	Function	Description
	1	PROTOGND	Protective or shield ground
	2	SENSEAIR	Enable sense A input return
	3	PSYNCAI-	Packet sync A input (-)
	4	PDATAI-	Packet data A input (-)
	5	PCLKAI+	Packet clock A input (+)
	6	PCLKAI-	Packet clock A input (-)
	7	REFCLKAI+	Ref_clock A input (+)
	8	REFCLKAI-	Ref_clock A input (-)
	9	SIGND	Signal or circuit ground reference
	10	RSVD	DHEI reserved
	11	SENSEAIL	Enable sense A loop input
	12	PSYNCAI+	Packet sync A input (+)
	13	PDATAI+	Packet data A input (+)
	14	RSVD	DHEI reserved
	15	PDATBO-	Packet data B output (-)
	16	PSYNCBO-	Packet sync B output (-)
	17	SENSEBOR	Enable sense B output return
	18	RSVD	DHEI reserved
	19	REFCLKBO+	Ref_clock B output (+)
	20	REFCLKBO-	Ref_clock B output (-)
	21	PCLKBO+	Packet clock B output (+)
	22	PCLKBO-	Packet clock B output (-)
	23	PDATBO+	Packet data B output (+)
	24	PSYNCBO+	Packet sync B output (+)
	25	SENSEBOL	Enable sense B loop output
	26	RSVD	DHEI reserved

Table 3-8: DHEI Expansion Out pin connections

DHEI 26-pin connector	Pin	Function	Description
	1	PROTOGND	Protective or shield ground
	2	SENSEAOR	Enable sense A output return
	3	PSYNCAO-	Packet sync A output (-)
	4	PDATAO-	Packet data A output (-)
	5	PCLKAO+	Packet clock A output (+)
	6	PCLKAO-	Packet clock A output (-)
	7	REFCLKAO+	Ref_clock A output (+)
	8	REFCLKAO-	Ref_clock A output (-)
	9	SIGND	Signal or circuit ground reference
	10	RSVD	DHEI reserved
	11	SENSEAOL	Enable sense A loop output
	12	PSYNCAO+	Packet sync A output (+)
	13	PDATAO+	Packet data A output (+)
	14	RSVD	DHEI reserved
	15	PDATBI-	Packet data B input (-)
	16	PSYNCBI-	Packet sync B input (-)
	17	SENSEBIR	Enable sense B input return
	18	RSVD	DHEI reserved
	19	REFCLKBI+	Ref_clock B input (+)
	20	REFCLKBI-	Ref_clock B input (-)
	21	PCLKBI+	Packet clock B input (+)
	22	PCLKBI-	Packet clock B input (-)
	23	PDATBI+	Packet data B input (+)
	24	PSYNCBI+	Packet sync B input (+)
	25	SENSEBIL	Enable sense B loop input
	26	RSVD	DHEI reserved

Power Characteristics

Table 3-9: AC power source characteristics

Characteristic	Description
Source Voltage	100 VAC to 240 VAC 47 Hz to 63 Hz, continuous range CAT II
Maximum Power Consumption	170 Watts, typical

Environmental Characteristics

Table 3-10: Environmental characteristics

Characteristic	Description
Cooling Airflow	Intake is from the front and sides of the instrument. Exhaust is to the bottom and rear of the instrument.
Required Clearance	2 in (50 mm) air space adjacent to the bottom of the instrument is required.
Use Rating	Rated for indoor use only.
Atmospherics	
Temperature:	
Operating	+5°C to +40°C, 30°C/hr max gradient, noncondensing (derated 1°C per 1,000 ft above 5,000 ft altitude)
Nonoperating	-20°C to 60°C, 30°C/hr max gradient (without disk media installed in disk drives)
Humidity	
Operating	20% to 80% relative humidity, noncondensing. Max wet bulb temperature: 29°C (derates relative humidity to ~22% at 50°C)
Nonoperating	8% to 80% relative humidity, noncondensing. Max wet bulb temperature: 40°C (derates relative humidity to ~55% at 50°C)
Altitude	
Operating	Up to 10,000 ft (3,040 m), (derated 1°C per 1,000 ft above 5,000 ft altitude)
Nonoperating	Up to 40,000 ft (12,190 m)

Mechanical (Physical) Characteristics

Table 3- 11: Mechanical characteristics

Characteristic	Description
Classification	Transportable platform intended for either rackmount or bench applications
Overall Dimensions	
Height	8.9 in (w/o feet) (22.6 cm)
Width	17 in (43.2 cm)
Depth	22 in (56 cm)
Weight	38 lb (17.3 kg)
Rack Space	5 rack units, standard length

Certifications and Compliances

Table 3- 12: Certifications and compliances

Category	Standard
EC Declaration of Conformity-EMC	Meets the intent of Directive 89/336/EEC for Electromagnetic Compatibility. Compliances was demonstrated using EN 61326: 1997 EMC Product Family Standard for Electrical Equipment for Measurement, Control, and Laboratory use. Emissions[1]: EN 61326 Class A Radiated and Conducted Emissions IEC 61000-3-2 Conducted Power Line Harmonic Current Immunity[1]: IEC 61000-4-2 Electrostatic Discharge Immunity IEC 61000-4-3 Radiated RF Electromagnetic Field Immunity[2] IEC 61000-4-4 Electrical Fast Transient/Burst Immunity IEC 61000-4-5 Power Line Surge Immunity IEC 61000-4-6 Conducted RF Immunity[2] IEC 61000-4-11 Voltage Dips and Short Interruptions Immunity
Australia/New Zealand declaration of conformity	Complies with EMC Framework and demonstrated per Emission standard: AS/NZS 2064 Industrial, Scientific, and Medical Equipment.
FCC Compliance	Emissions comply with FCC Code of Federal Regulations 47, Part 15, Subpart B, Class A Limits

1 Compliance demonstrated using high quality, shielded interface cables.
2 Performance Criterion: Product continues to operate properly and display remains readable.

Table 3-13: Environmental limits and use classification for safety certification compliance

Category	Standards or description	
Safety Certification Compliance		
Temperature, operating	0° C to +50° C	
Altitude (maximum operating)	2000 meters	
Equipment Type	Test and measuring	
Safety Class	Class 1 (as defined in IEC 61010-1, Annex H) - grounded product	
Installation (Overvoltage) Category	Overvoltage Category II (as defined in IEC 61010-1, Annex J)	
Pollution Degree	Pollution Degree 2 (as defined in IEC 61010-1). Note: Rated for indoor use only.	
Supply Voltage Range	100 VAC to 240 VAC, 50/60 Hz, single phase	
Fuse Rating	Mains fuse is 10A, 250V, Fast; Not operator replaceable. Refer servicing to qualified service personnel.	
Current Rating	6.0 Amps maximum	
Relative Humidity (maximum operating)	80 % for temperatures up to 31° C, decreasing linearly to 50 % at 40° C	
Pollution Degree Definition	A measure of the contaminates that could occur in the environment around and within a product. Typically the internal environment inside a product is considered to be the same as the external environment. Products should be used only in the environment for which they are rated.	
	Pollution Degree 1	No pollution or only dry, nonconductive pollution occurs. Products in this category are generally encapsulated, hermetically sealed, or located in clean rooms.
	Pollution Degree 2	Normally only dry, nonconductive pollution occurs. Occasionally a temporary conductivity that is caused by condensation must be expected. This location is a typical office/home environment. Temporary condensation occurs only when the product is out of service.
	Pollution Degree 3	Conductive pollution, or dry, nonconductive pollution that becomes conductive due to condensation. These are sheltered locations where neither temperature nor humidity is controlled. The area is protected from direct sunshine, rain, or direct wind.
European Union Compliance	Compliance was demonstrated to the following specification as listed in the Official Journal of the European Union:	
	Low Voltage Directive 73/23/EEC, amended by 93/68/EEC	
	EN 61010-1/A2	Safety Requirements for Electrical Equipment for Measurement Control and Laboratory Use.
Listing by a U.S. Nationally Recognized Testing Laboratory	ANSI/ISA S82.01	Safety Standard for Electrical and Electronic Test, Measuring, Controlling, and Related Equipment., 1994.
Canadian Certification	CAN/CSA C22.2 No. 1010.1	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use.

Table 3-13: Environmental limits and use classification for safety certification compliance (cont.)

Category	Standards or description	
Additional Compliance	UL3111-1	Standard for Electrical Measuring and Test Equipment.
	IEC61010-1/A2	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use.
Installation (Overvoltage) Category	Terminals on this product may have different installation (overvoltage) category designations. The installation categories are:	
	CAT III	Distribution-level mains (usually permanently connected). Equipment at this level is typically in a fixed industrial location.
	CAT II	Local-level mains (wall sockets). Equipment at this level includes appliances, portable tools, and similar products. Equipment is usually cord-connected.
	CAT I	Secondary (signal level) or battery operated circuits of electronic equipment.
Laser Classification	This product contains a CD ROM drive which utilizes a Class 1 laser and complies with EN60825-1:94, as well as with the U.S. FDA regulations. The drive is marked with the laser's classification and the date of manufacture, as well as the following information: Complies with the DHHS rules 21 CFR Chapter 1, Subchapter J applicable at the date of manufacture.	

Software Repair and Recovery

Software Repair and Recovery

The MTS300 system is shipped with a 3 1/2 in floppy disk and two CD-ROMs that you will use to restore the system software and configuration when the MTS300 system has operating system or application software problems.

Use the *MTS300 MPEG Test System Operating System Recovery* CD to restore the Windows NT operating system, device drivers, and services. This CD is bootable from the CD-ROM drive of the MTS300 system.

Use the *MTS300 MPEG Test System Application Software Recovery* CD to reinstall the MTS300 application software.

Software Repair Strategy

Depending on the severity of the problem, you may need to restore only a portion of the MTS300 system software. Repair suspected software problems in the following order:

1. Restore the individual device driver or configuration setting that appears corrupt.
2. Restore the MTS300 system application software.
3. Restore the MTS300 operating system. Since restoring the operating system destroys all data on the IDE hard drive, you will have to restore the complete MTS300 system application software, restripe the SCSI hard drives, and reenter the MTS300 General License password.

The software recovery procedures in this section are divided into three sections: System Settings, Device Drivers, and Operating System and MTS300 Application Software.

Troubleshooting

Use the following troubleshooting techniques to identify drivers or services that need to be restored:

1. Restore the indicated service or driver when you observe an error message or if an attempted action fails to start.
2. When a device driver or service fails to start, Windows NT will log an event about the problem in the Event Viewer. If you suspect a software problem, but have not seen an error message, open the Event Viewer by selecting Start | Administrative Tools | Event Viewer from the Windows NT Start menu.

For example, if the audio device driver fails, an event in the log says: "The following boot-start or system-start driver(s) failed to load: auddrive."

Reinstalling the device driver or service indicated in the Event Viewer will repair most driver or service problems of this kind.

3. If new components of Windows NT are installed, such as SNMP service, some DLL file versions may not match. If you observe an error message about missing or corrupt DLL files, start by restoring the Windows NT service pack (see *Restoring Microsoft Windows NT Service Pack 6* beginning on page 4–16).

Restoring System Settings

You can restore the following system settings using the *MTS300 MPEG Test System Operating System Recovery* CD:

Restoring Device Drivers

You can restore the following device drivers using the *MTS300 MPEG Test System Operating System Recovery* CD:

Restoring the Operating System and MTS300 Application Software

You can restore the operating system and MTS300 application software using the following procedures:

Restoring System Settings

This section contains procedures for restoring the following system settings: boot order, BIOS, SCSI drive controller, SCSI drive stripe set, display, COM port, taskbar auto-hide, event viewer, Windows NT Explorer, boot initialization countdown, Auto Logon, NetBEUI protocol, Microsoft TCP/IP printing service, SNMP service, and Windows NT service pack 6a.

Restoring the Boot Order

By factory default, the boot order of the MTS300 system is set to the following:

1. Removable devices
2. CD-ROM drive
3. Hard drive
4. Network

By factory default, the hard disk boot order of the MTS300 system is set to the following:

1. <disk brand name and model> (IDE drive)
2. Bootable add-in cards (SCSI drives)

If either boot-order has been changed on your MTS300 system, use the following procedure to restore the factory-default boot options in the system BIOS:

1. Reboot the MTS300 system (without a recovery CD in the CD-ROM drive).

2. Press the **F2 function key** to enter the BIOS Setup utility when you are prompted in the MTS300 system start-up messages. The message will appear in the lower left of the display.

3. In the System BIOS utility window, highlight **F4-BOOT OPTIONS** and press **Enter**.

4. If the items in the BOOT ORDER list and the HARD DISK ORDER list do not match the factory-default orders listed above, use the **Up/Down** arrow keys to select a device in the desired list, and then use the **Left/Right** arrow keys to move the selected device to the factory-default position in the list.

5. After you have corrected the order of the boot lists, press the **ESC key** to return to the main menu.

6. Highlight **F10-EXIT** and press **Enter** to access the Exit menu.

7. Select **Exit Saving Changes** and press **Enter** to exit the BIOS setup utility and save changes. The MTS300 system will continue its power-on process using the new settings.

Restoring the BIOS Settings

To help restore the MTS300 system BIOS settings, the *MTS300 MPEG Test System Operating System Recovery* CD contains a CMOS NVRAM Read/Write utility program and the factory-default BIOS image.

Perform the following steps to restore the MTS300 system BIOS settings:

1. Insert the *MTS300 MPEG Test System Operating System Recovery* CD into the CD-ROM drive of the MTS300 system, and then reboot the instrument.
2. When the MTS300 system has booted from the recovery CD-ROM, a readme text file will be displayed. The readme text file contains instructions on how to perform various commands.
3. Type the following command in the DOS window to reprogram the CMOS NVRAM back to the factory-default setting for the BIOS:

   ```
   RESTBV14.BAT
   ```

4. When the BIOS has been successfully restored, an array of BIOS values will be displayed on the screen.
5. Reboot the MTS300 system after the BIOS value array is displayed.

NOTE. *To manually configure the BIOS of the MTS300 system, refer to the* MTS300 MPEG Test System Service Manual.

Restoring the SCSI Drive Controller Settings

The MTS300 system is equipped with 3 ultra-wide SCSI hard disks. The SCSI controller must be configured with the Ultra SCSI Speed option enabled to ensure the required data-access performance to and from the SCSI hard disks.

By default, the SCSI controller has this option disabled. The MTS300 system is shipped from the factory with this option enabled. If the Ultra SCSI Speed option has been changed, either manually or by resetting the SCSI host adapter, you must restore the factory default SCSI controller settings and enable the Ultra SCSI Speed option to ensure proper performance.

Perform the following procedure to restore the SCSI controller settings back to the factory-default values and to enable the Ultra SCSI Speed option:

1. Reboot the MTS300 system without a recovery disk in the CD-ROM drive.
2. Press **CTRL+A** when you are prompted to access the SCSI Select Utilities.
3. Select **Configure/View Host Adapter Settings** in the utility window and press **Enter**.
4. Press the **F6 function key** to reset the Host Adapter settings back to the factory-default values.
5. Select **Yes** to confirm loading all of the default configuration settings.
6. Select **Advanced Configuration Options** in the utility window and press **Enter**.
7. Select the **Support for Ultra SCSI Speed** option and press **Enter**.
8. Select **Enabled** and press **Enter**.
9. Press **ESC** to return to the previous menu.
10. Press **ESC** again to return to the main utility menu.
11. Select **Yes** in the Save Changes Made? dialog box and press **Enter**.
12. Press **ESC**, and then select **Yes** in the Exit Utility? dialog box to exit the SCSI Select utility.
13. Press any key to reboot the MTS300 system using the new settings.

Restoring the SCSI Drive Stripe Set

If the three SCSI hard drives have their striped-set condition corrupted, or you have restored the operating system, all transport stream data stored on them is lost and cannot be recovered. You can use the Disk Administrator utility to restore the striped-set condition of the SCSI hard drives so that you can store new data on them.

***NOTE**. This restoration procedure will only be effective if each of the three SCSI hard drives are still functional.*

Perform the following steps to format the SCSI hard drives into a striped set:

1. Select **Start | Programs | Administrative Tools | Disk Administrator** in the Windows NT Start menu to open the Disk Administrator utility.

   The Disk Administrator will display information about each of the drives of the MTS300 system. In the utility display, disk 0 (C:) is the IDE drive containing the operating system software. Disks 1, 2, and 3 (E:) are the striped-set SCSI hard drives containing the transport stream data. The CD-ROM drive (D:) is shown at the bottom of the display.

2. Select all three SCSI hard drives (disks 1, 2, and 3). Click within the large box next to the Disk 1 label to select the disk (the outline of the box will highlight).

3. If all three SCSI disk drives do not highlight as shown in Figure 4–1, hold down the CTRL key and left-click the other two drive boxes to select all three disk drives.

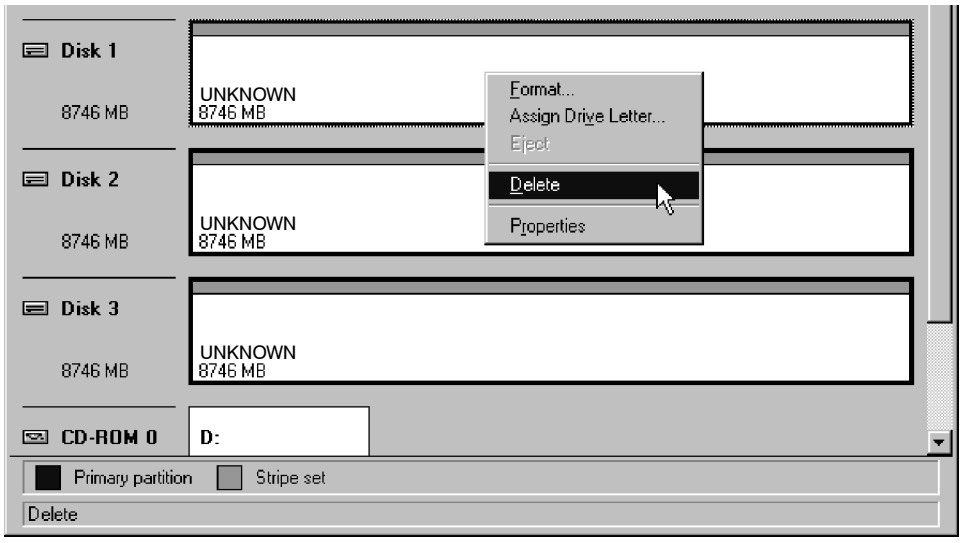


Figure 4- 1: Deleting partitions using the Disk Administrator utility

4. Right-click within one of the highlighted boxes of the selected SCSI drives, and select **Delete** from the shortcut menu to delete any existing partitions on the three SCSI hard drives. Click **Yes** in the Confirm dialog box to continue.
5. Reselect the three SCSI hard drives as described above, and then select **Create Stripe Set** from the shortcut menu.
6. Click **OK** in the Create Stripe Set dialog box to create a stripe set of maximum size (the default setting in the dialog box).
7. Verify that the striped set should be displayed as unformatted logical drive E: and the CD-ROM as logical drive D:. If the drive letters are labeled incorrectly, use the menu selection **Assign Drive Letter** to change them.
8. Select the unformatted striped-set SCSI hard drives. All three drives should highlight when you click one of the drive boxes.
9. Select **Format** from the Tools menu to open the Format dialog box.
10. In the Format dialog box, select **NTFS File System**, verify that no Format Options are selected, and then click **Start**.
11. Click **OK** in the Warning dialog box to continue the formatting process. The Format dialog box will show the formatting progress. The process will take several minutes.
12. When the formatting is complete, click **OK** in the Format Complete dialog box, and then click **Close** to close the Format dialog box.
13. Exit the Disk Administrator utility.

Restoring the Display Setting

Perform the following procedure to restore the resolution and color palette settings for the display:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. Select **Settings | Control Panel** from the Windows NT Start menu.
3. Double-click **Display** in the Control Panel window to open the Display Properties dialog box.
4. Select the **Settings** tab, and then click **Display Type** to open the Display Type dialog box.
5. Set the **Desktop Area** option to **800 by 600 pixels**.
6. Set the **Color Palette** option to **16777216 colors**.
7. Click **Test** to verify the changes, and then click **OK** to apply the changes and exit the Display Properties dialog box.

Restoring the COM Port Settings

The MTS300 system uses the COM1, COM3, and COM4 ports. COM2 is not used by the MTS300 system.

Perform the following procedure to restore the COM port settings:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. Select **Settings | Control Panel** from the Windows NT Start menu.
3. Double-click **Ports** in the Control Panel window to open the Ports dialog box. The COM ports that are configured are listed in the Ports list box.
4. Delete any listed COM port other than COM1, COM3, and COM4. For example, if COM2 appears in the Ports list, highlight **COM2**, click **Delete**, and then click **OK** in the Ports Control Panel dialog box.
5. If COM1, COM3, or COM4 are not in the Ports list, click **Add** to open the Advanced Settings for New Port dialog box.
6. Use the COM Port Number list box to select the COM port number (1, 3, or 4) that the MTS300 system does not have configured.
7. Use Table 4–1 to set the proper Base I/O Port address and Interrupt Request Line (IRQ) parameter values for the selected COM port.
8. Click **OK** in the Advanced Settings for New Port dialog box. The System Setting Change dialog box will appear asking you to restart Windows NT.
9. Click **Don't Restart Now** to continue setting the remaining COM port parameters.
10. After you set the parameters for COM1, COM3, and COM4, close the Ports dialog box and reboot the MTS300 system (without a recovery CD in the CD-ROM drive) to use the new COM port settings.

Table 4-1: MTS300 system COM port settings

Parameter	COM1	COM3	COM4
Base I/O port address	03F8-03FF	03E8-03EF	02E8-02EF
Interrupt request line (IRQ)	10	04	03
FIFO	Enabled	Enabled	Enabled
Baud rate	9600	2400	9600
Data bits	8	8	8
Parity	None	None	None
Stop bits	1	1	1
Flow control	None	None	None

Restoring the Taskbar Auto-Hide Setting

The MTS300 system is shipped with the Taskbar auto-hide option enabled. This option hides the Taskbar and requires you to move the mouse cursor to the bottom of the screen to display the Taskbar. Perform the following procedure to restore the Auto-Hide setting for the Microsoft Windows NT Taskbar:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. Select **Settings | Taskbar** from the Windows NT Start menu.
3. Select the **Taskbar Options** tab of the Taskbar properties dialog box.
4. Click the **Auto hide** check box to select the option (check mark in the box).
5. Click OK to close the dialog box and apply the setting change.

Restoring the Event Viewer Setting

Perform the following procedure to restore the log size and file overwrite settings for the Event Viewer:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. Select **Programs | Administrative Tools | Event Viewer** from the Windows NT Start menu.
3. Select **Log Settings** from Log menu in the Event Viewer window to open the Event Log Settings dialog box.
4. In the Event Log Settings dialog box, select **Application** in the Change Settings For list box.
5. Set the **Maximum Log Size** option to **20480** Kilobytes.
6. Click the **Overwrite Events as Needed** option box to select the option.
7. Select **System** from the Change Settings For list box.
8. Click the **Overwrite Events as Needed** option box to select the option.
9. Select **Security** from the Change Settings For list box.
10. Click the **Overwrite Events as Needed** option box to select the option.
11. Click **OK** to close the Event Log Settings dialog box, and then select **Exit** from the Log menu to close the Event Viewer window.

Restoring the Windows NT Explorer Settings

Perform the following procedure to restore the file display settings for Windows NT Explorer:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. Select **Programs | Windows NT Explorer** from the Windows NT Start menu.
3. Select **Options** from the View menu in the Explorer window.
4. Select the View tab of the Options dialog box.
5. Select the **Show all files** option, and then deselect the **Hide file extensions for known file types** option.
6. Click **OK** to close the Options dialog box, and then select **Close** from the File menu in the Explorer window.

Restoring the Boot Initialization Countdown

The Boot Initialization Countdown setting controls the amount of time the OS Loader waits for the user to select which operating system to load while the instrument boots. The factory default setting is 3 seconds. Perform the following procedure to restore the operating system boot initialization countdown:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. Select **Settings | Control Panel** from the Windows NT Start menu.
3. Double-click the **System** icon to open the System Properties dialog box.
4. Select the **Startup/Shutdown** tab.
5. Select **3 seconds** in the **Show list for** list box.
6. Click **OK** to close the System Properties dialog box and apply the setting change.

Setting, Resetting, and Disabling Auto Logon

The Auto Logon option allows you to select a user name and password that the MTS300 system will use to automatically log on to Windows NT when you power-on the instrument. This feature is enabled at the time the instrument was manufactured. This section contains two procedures. The first procedure initializes the Auto Logon option and changes an existing Auto Logon user name and password. The second procedure disables the Auto Logon option (requiring the entry of a user name and password each time the instrument is powered on).

Setting and Resetting Auto Logon. Perform the following procedure to set or reset the automatic logon option:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. Select **Run** from the Windows NT Start menu, and then click **Browse** in the Run dialog box.
3. The Auto Logon utility is located in two directory locations:
   - **D:\Tools\Autologn.exe** of the *MTS300 MPEG Test System Operating System Recovery* CD
   - **C:\Mts300\Bin\AutoLogon.exe** on the MTS300 system
4. In the Browse dialog box, specify one of the directory paths shown above, and then click **Open**.
5. Click **OK** in the Run dialog box to run the selected Auto Logon utility. The Auto Logon dialog box will open.

CAUTION. *Entering a new user name and password will overwrite the existing user name and password used by the MTS300 system to Auto Logon.*

The default user name and password for the auto-logon feature are `Administrator` *and* `MPEG2`*, respectively.*

6. Use the Auto Logon dialog box to enter the user name and password that the MTS300 system will use to automatically logon to Windows NT when the instrument boots. The factory defaults are `Administrator` (user name) and `MPEG2` (password).
7. Click **OK** to apply the Auto Logon setting. The next time the MTS300 system boots, the new Auto Logon settings will be used.

Disabling Auto Logon. Perform the following procedure to disable Auto Logon (requiring the entry of a user name and password each time the instrument is powered on):

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. Select **Run** from the Windows NT Start menu.
3. Enter **regedt32** in the Run dialog box, and then click **Open**. This opens the Registry Editor window.
4. In the Registry Editor window, select the **HKEY_LOCAL_MACHINE on Local Machine** panel.
5. In the HKEY_LOCAL_MACHINE on Local Machine panel, select **Winlogon** in the following directory path:

   HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion
6. After you select Winlogon, the right pane of the HKEY_LOCAL_MACHINE on Local Machine panel displays the contents of the file. Highlight the line in the right pane that starts **DefaultUserName:**, and then select **Edit | Delete** from the menu.
7. Click **Yes** in the Warning message box.
8. Highlight the line in the right pane that starts **DefaultPassword:**, and then select **Edit | Delete** from the menu.
9. Click **Yes** in the Warning message box.
10. Select **Registry | Exit** from the menu to close the Registry Editor window.
11. The next time the MTS300 system boots, Auto Logon will be disabled and the user will be asked for user name and password to logon to Windows NT.

Restoring the NetBEUI Protocol

The NetBEUI protocol is a network protocol for small local networks. The NetBEUI protocol allows users to browse on a network without setting TCP/IP parameters. Perform the following procedure to restore the NetBEUI protocol:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. Select **Settings | Control Panel** from the Windows NT Start menu.
3. Double-click the **Network** icon to open the Network dialog box, and select the **Protocols** tab.
4. If **NetBEUI Protocol** is already in the Network Protocols list, highlight it and click **Remove**.
5. Click **Yes** in the message box, and then click **Close** in the Network dialog box.
6. Click **Yes** in the Network Settings Change message box to reboot the MTS300 system (without a recovery CD in the CD-ROM drive).
7. After the system has rebooted and you have logged on, insert the *MTS300 MPEG Test System Operating System Recovery* CD into the CD-ROM drive of the MTS300 system.
8. Select **Settings | Control Panel** from the Windows NT Start menu.
9. Double-click the **Network** icon to open the Network dialog box, and select the **Protocols** tab.
10. In the Select Network Protocol dialog box, select **NetBEUI Protocol** in the list, and then click **OK**.
11. Verify that **D:\1386** is the path shown in the Windows NT Setup dialog box, and then click **Continue**.
12. After the protocol is installed, click **Close** to close the Network dialog box, and then remove the recovery CD from the CD-ROM drive.

***NOTE**. If you do not remove the operating system recovery CD from the CD-ROM drive, the MTS300 system will boot using the recovery CD.*

13. Click **Yes** in the Network Settings Change message box to reboot the MTS300 system using the new settings.
14. After the MTS300 system reboots, you must perform the procedure in *Restoring Microsoft Windows NT Service Pack 6a* on page 4–16.

Restoring the Microsoft TCP/IP Printing Service

The TCP/IP printing service allows users to print over their network. Perform the following procedure to restore the Microsoft TCP/IP printing service:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. Select **Settings | Control Panel** from the Windows NT Start menu.
3. Double-click the **Network** icon to open the Network dialog box, and then select the **Services** tab.
4. If **Microsoft TCP/IP Printing** is already in the Network Services list, highlight it and click **Remove**.
5. Click **Yes** in the message box, and then click **Close** in the Network dialog box.
6. Click **Yes** in the Network Settings Change message box to reboot the MTS300 system (without a recovery CD in the CD-ROM drive).
7. After the system has rebooted and you have logged on, insert the *MTS300 MPEG Test System Operating System Recovery* CD into the CD-ROM drive of the MTS300 system.
8. Select **Settings | Control Panel** from the Windows NT Start menu.
9. Double-click the **Network** icon to open the Network dialog box, and then select the **Services** tab.
10. In the Select Network Service dialog box, select **Microsoft TCP/IP Printing** in the list, and then click **OK**.
11. Verify that **D:\1386** is the path shown in the Windows NT Setup dialog box, and then click **Continue**.
12. After the service is installed, click **Close** to close the Network dialog box, and then remove the recovery CD from the CD-ROM drive.

***NOTE**. If you do not remove the operating system recovery CD from the CD-ROM drive, the MTS300 system will boot using the recovery CD.*

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13. Click **Yes** in the Network Settings Change message box to reboot the MTS300 system using the new settings.
14. After the MTS300 system reboots, you must perform the procedure in *Restoring Microsoft Windows NT Service Pack 6a* on page 4–16.

Restoring the SNMP Service

SNMP service is required if you are connecting the MTS300 system to your local network. Perform the following procedure to restore the SNMP service:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. Select **Settings | Control Panel** from the Windows NT Start menu.
3. Double-click the **Network** icon to open the Network dialog box, and then select the **Services** tab.
4. If **SNMP Service** is already in the Network Services list, highlight it and click **Remove**.
5. Click **Yes** in the message box, and then click **Close** in the Network dialog box.
6. Click **Yes** in the Network Settings Change message box to reboot the MTS300 system (without a recovery CD in the CD-ROM drive).
7. After the system has rebooted and you have logged on, insert the *MTS300 MPEG Test System Operating System Recovery* CD into the CD-ROM drive of the MTS300 system.
8. Select **Settings | Control Panel** from the Windows NT Start menu.
9. Double-click the **Network** icon to open the Network dialog box, and then select the **Services** tab.
10. In the Select Network Service dialog box, select **SNMP Service** in the list, and then click **OK**.
11. Verify that **D:\1386** is the path shown in the Windows NT Setup dialog box, and then click **Continue**.
12. After the SNMP service is installed, the Microsoft SNMP Properties dialog box is displayed. Click **OK** to accept the default SNMP properties, or enter the specific SNMP management settings for your network. Contact your network administrator if you need assistance setting SNMP properties.
13. Click **Close** to close the Network dialog box, and then remove the recovery CD from the CD-ROM drive.

***NOTE**. If you do not remove the operating system recovery CD from the CD-ROM drive, the MTS300 system will boot using the recovery CD.*

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14. Click **Yes** in the Network Settings Change message box to reboot the MTS300 system using the new settings.
15. After the MTS300 system reboots, you must perform the procedure in *Restoring Microsoft Windows NT Service Pack 6a* on page 4–16.

Restoring Microsoft Windows NT Service Pack 6a

Perform the following procedure to restore the Microsoft Windows NT service pack 6a:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. After the MTS300 system boots, insert the *MTS300 MPEG Test System Operating System Recovery* CD into the CD-ROM drive of the MTS300 system.
3. Select **Run** from the Windows NT Start menu.
4. Click **Browse** in the Run dialog box.
5. In the Browse dialog box, specify **d:\sp6a\sp6i386.exe** as the file you want to run and click **Open**.
6. Click **OK** in the Run dialog box to run the sp6i386.exe file. The Extracting Files dialog box displays the progress of the program.
7. Read the Windows NT Service Pack Setup license agreement. Click the **Accept the License Agreement** box, and then click **Install.**
8. The Extracting Files dialog box displays continued program progress.

CAUTION. *To prevent system problems, click* ***No*** *if you see a message about overriding the E100B.SYS file.*

9. After the installation is complete, the Windows NT Service Pack Setup dialog box appears.
10. Remove the recovery CD from the CD-ROM drive.

NOTE*. If you do not remove the operating system recovery CD from the CD-ROM drive, the MTS300 system will boot using the recovery CD.*

11. Click **Restart** in the Windows NT Service Pack Setup dialog box to reboot the MTS300 system.

Restoring Device Drivers

This section contains procedures for restoring the following device drivers: sound chip, display, soft power-off, PCI adapter, and touch screen.

Restoring the Sound Chip Driver

Perform the following procedure to restore the ESS Technology ES1869 sound chip driver:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. Select **Settings | Control Panel** from the Windows NT Start menu.
3. Double-click **Multimedia** in the Control Panel window to open the Multimedia Properties dialog box.
4. Select the **Devices** tab, and then double-click **Audio Devices** to display the available selections.
5. Select **ES1879/1869/1878/1868/1887/1888 AudioDrive**, and then click **Remove**. Click **Yes** to remove the existing audio driver.
6. Click **Restart now** to reboot the MTS300 system.
7. After the MTS300 system reboots, insert the *MTS300 MPEG Test System Operating System Recovery* CD into the CD-ROM drive of the MTS300 system.
8. Double-click **Multimedia** in the Control Panel window, and then select the **Devices** tab.
9. Select **Audio Devices**, and then click the **Add** button.
10. Select **Unlisted or Updated Driver** from the list of drives in the Add dialog box, and then click **OK**.
11. Click **Browse** in the Install Driver dialog box.
12. Select **D:** in the Drives list box, and then specify the following directory path: **D:\drivers\essaudio**.
13. Click **OK** to return to the Install Driver dialog box, and then click **OK** in the Add Unlisted or Updated Driver box to install the sound-chip driver.
14. Click **New** in the Driver Exists dialog box to use the new auddrive.dll driver.
15. Remove the operating system recovery CD from the CD-ROM drive.
16. Click **Restart now** to reboot the MTS300 system using the new ES1869 sound chip driver.

Restoring the Display Driver

Perform the following procedure to restore the Chip & Technology 69000 display driver:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. After the MTS300 system boots, insert the *MTS300 MPEG Test System Operating System Recovery* CD into the CD-ROM drive of the MTS300 system.
3. Select **Settings | Control Panel** from the Windows NT Start menu.
4. Double-click **Display** in the Control Panel window to open the Display Properties dialog box.
5. Select the **Settings** tab, and then click **Display Type** to open the Display Type dialog box.
6. Click the **Change** button, and then click the **Have Disk** button in the Change Display dialog box.
7. Select **D:** in the Copy manufacturer's files from list box, and then click the **Browse** button. Select the directory path **D:\Drivers\Chipstec** in the Locate File dialog box, and then click **Open**.
8. Click **OK** in the Install From Disk dialog box (the MTS300 system will find the correct driver), and then click **OK** in the Change Display dialog box to start the driver installation.
9. After the driver is successfully installed, remove the operating system recovery CD from the CD-ROM drive.
10. Close the Display Properties dialog box, and then click **Yes** in the System Settings Change dialog box to reboot the MTS300 system using the new display driver.

NOTE. *If you do not remove the operating system recovery CD from the CD-ROM drive, the MTS300 system will boot using the recovery CD.*

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11. After the MTS300 system reboots, you must perform the procedure in *Restoring the Display Setting* on page 4–7 to restore the display setting.

Restoring the Soft Power-Off Driver

Perform the following procedure to restore the soft power-off driver:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. After the MTS300 system boots, insert the *MTS300 MPEG Test System Operating System Recovery* CD into the CD-ROM drive of the MTS300 system.
3. Select **Programs | Command Prompt** from the Windows NT Start menu.
4. At the command prompt, type **d:** and press **Enter**.
5. At the command prompt, type **cd drivers\poweroff** and press **Enter**. The command prompt should read D:\DRIVERS\POWEROFF.
6. At the command prompt, type **regini jamshut.ini** and press **Enter**.
7. At the command prompt, type **copy jamshut.sys c:\winnt\system32\drivers** and press **Enter**.
8. At the command prompt, type **regini jamsrv.ini** and press **Enter**.
9. At the command prompt, type **copy jamsrv.exe c:\winnt\system32** and press **Enter**.
10. After the command prompt returns, close the Command Prompt window and remove the recovery CD from the CD-ROM drive.

***NOTE**. If you do not remove the operating system recovery CD from the CD-ROM drive, the MTS300 system will boot using the recovery CD.*

11. Reboot the MTS300 system (without a recovery CD in the CD-ROM drive) to use the new soft power-off driver.

Restoring the PCI Adapter Driver

Perform the following procedure to restore the Intel EtherExpress PRO/100B PCI Adapter driver:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. After the MTS300 system boots, insert the *MTS300 MPEG Test System Operating System Recovery* CD into the CD-ROM drive of the MTS300 system.
3. Select **Programs | Command Prompt** from the Windows NT Start menu.

CAUTION. *To prevent installation problems with the EtherExpress driver, follow this procedure and copy the driver from the CD to a location on the MTS300 system hard drive before you install the driver. Installing the driver directly from the recovery CD may result in the PCI adapter driver not functioning properly.*

4. At the command prompt, type **copy d:\drivers\etherexp c:\temp** and press **Enter**.
5. Select **Settings | Control Panel** from the Windows NT Start menu.
6. Double-click **Network** in the Control Panel window to open the Network dialog box, and the select the **Adapters** tab.
7. Select the displayed driver and click **Remove**. Click **Yes** in the Warning dialog box.
8. Remove the operating system recovery CD from the CD-ROM drive.

NOTE*. If you do not remove the operating system recovery CD from the CD-ROM drive, the MTS300 system will boot using the recovery CD.*

9. Close the Network dialog box and click **Yes** in the Network Settings Change dialog box to reboot the MTS300 system.
10. While the MTS300 system boots, click **OK** to continue through any service or driver error messages that appear.
11. After the MTS300 system boots, select **Settings | Control Panel** from the Windows NT Start menu.
12. Double-click **Network** in the Control Panel window to open the Network dialog box, and the select the **Adapters** tab.
13. Click **Add** in the Network dialog box, and then click **Have Disk** in the Select Network Adapter dialog box.
14. Type **c:\temp**, click **OK** in the Inset Disk dialog box, and then click **OK** in the Select OEM Option dialog box.
15. Select **(1) Intel(R) PRO/100B PCI Adapter (TX)** in the Network Adapters list and click **Update**.
16. Specify **c:\temp** as the directory location for the driver in the Windows NT Setup dialog box, and then click **Continue**.
17. Click the **Bindings** tab in the Network dialog box to update the Network bindings, and then click the **Protocols** tab.

18. Select **TCP/IP Protocol** in the Network Protocols list, and then click **Properties** to open the Microsoft TCP/IP Properties dialog box.
19. Select the **IP Address** tab, and then select **(1) Intel(R) PRO/100B PCI Adapter (TX)** in the Adapter list box.
20. If you are not going to use the MTS300 system on a network, enter **1.1.1.1** in the IP Address box.
21. If you are using the MTS300 system on a local network, enter the network IP address, subnet mask, and default gateway your network administrator assigned to your MTS300 system.
22. After you enter your network IP address parameters, click **Apply** to apply the changes, and then click **Close** to close the Network dialog box.
23. Reboot the MTS300 system (without a recovery CD in the CD-ROM drive).

Restoring the Touch-Screen Driver

Perform the following procedure to restore the Touch-Base SC3 Touch-Screen driver:

1. Boot up the MTS300 system (without a recovery CD in the CD-ROM drive).
2. After the MTS300 system boots, insert the *MTS300 MPEG Test System Operating System Recovery* CD into the CD-ROM drive of the MTS300 system.
3. Select **Run** from the Windows NT Start menu.
4. Click **Browse** in the Run dialog box.
5. In the Browse dialog box, specify **d:\drivers\touchbas\tnsetup.exe** as the file you want to run and click **Open**.
6. Click **OK** in the Run dialog box to run the tnsetup.exe file. The TNdriver Setup window opens.
7. Click **OK** to select **c:\win32app** (default selection) as the directory location for the touchscreen control files to be located.
8. Read the License Agreement and then click **Agree** to continue.
9. Select **Dynapro - Serial, SC3** in the Select Touchscreen dialog box, and then click **OK**.
10. Click **OK** to select **Touch** (default selection) as the group where the touchscreen control program will be located.
11. Click **OK** in the Hardware Configuration dialog box to open the Hardware Controls (Serial) dialog box.

12. Use Table 4–2 to set the touchscreen parameters in the Hardware Controls (Serial) dialog box, and then click **OK**.

Table 4-2: Touchscreen driver hardware settings

Parameter	Setting
Com Port	Com 3
Configuration address	3E8
Configuration Irq	4
Baud rate	2400
Parity	None
Data bits	8
Stop bits	1

13. Read the Readme file, click **OK**, and then click **OK** in the Installation complete dialog box.

14. Remove the operating system recovery CD from the CD-ROM drive, and then reboot the MTS300 system.

***NOTE**. If you do not remove the operating system recovery CD from the CD-ROM drive, the MTS300 system will boot using the recovery CD.*

15. After the MTS300 system reboots, select **Programs | Touch | Touchscreen Control** from the Windows NT Start menu.

16. In the resulting Touch Screen Control Program window, click **Calibrate**.

17. Follow the displayed instructions to calibrate the touch screen. Click **OK** when the calibration is complete.

18. Click **User Controls** in the Touch Screen Control Program window to display the User Controls dialog box.

19. In the User Controls dialog box, click the **Sound** option box to deselect the option (no check mark in the Sound box), and then click **OK** to close the User Controls dialog box.

***NOTE**. Having the Sound option deselected (no sound) is the factory-default setting. You can select the Sound option if you want the MTS300 system to beep each time you make a touchscreen selection.*

20. Select **File | Exit** to close the Touch Screen Control Program window.

Restoring the Operating System and Application Software

In some situations, such as a power interruption or accidental deletion of files, the MTS300 system may fail to boot from the hard drive. To recover, you must use the *MTS300 MPEG Test System Operating System Recovery* CD to restore the hard drives back to their factory-default installation status.

The MTS300 system contains one IDE hard drive with a single partition, and three SCSI hard drives that are striped as a single logical drive to obtain high data-storage rates. The IDE hard drive is used to store the MTS300 system and application software. The SCSI hard drives are used to store and generate transport streams. The SCSI drive stripe-set and the IDE hard drive are formatted using the NTFS file system.

***NOTE**. If you restore the Microsoft Windows NT operating system, you must also restripe the SCSI hard drives, restore the MTS300 system applications, and enter the General License password for the MTS300 system.*

Software Repair Strategy

Depending on the severity of the suspected software problem, you may only need to restore a portion of the MTS300 system software. Since restoring the operating system destroys all data on the IDE hard drive, the procedure in this section should be used only as a last resort.

It is recommended that you attempt to repair suspected operating system problems in the following order:

1. Restore the individual device driver or configuration setting that appears to be not functioning properly.
2. Restore the MTS300 system application software.
3. Restore the MTS300 operating system. Since restoring the operating system destroys all data on the IDE hard drive, you will have to restore the complete MTS300 system application software, restripe the SCSI hard drives, and reenter the MTS300 General License password.

Restoring the Microsoft Windows NT Operating System

This procedure will be effective only if the IDE hard drive is still functional. If the MTS300 system does not boot after you perform this procedure, contact a Tektronix, Inc. representative for assistance.

CAUTION. *Restoring the MTS300 operating system software will destroy all existing data on the MTS300 system IDE hard drive and will restore only the operating system(s) that were originally factory installed on the MTS300 system.*

If you restore the operating system, you must also perform the procedures listed below in the order indicated:

1. *Restoring the MTS300 System Applications* *page 4-25*
2. *Entering the General License Password* *page 4-29*
3. *Restoring the SCSI Drive Stripe Set* *page 4-6*

To restore the content of the MTS300 system IDE hard drive, which includes the Microsoft Windows NT 4.0 operating system and the MTS300 MPEG Test System applications, perform the following steps:

1. Install the *MTS300 MPEG Test System Operating System Recovery* CD in the CD-ROM drive of the MTS300 system, and then boot the MTS300 system.

NOTE. *If the MTS300 system does not boot from the CD-ROM drive, verify that the MTS300 system boot order is properly set. Refer to* Restoring the Boot Order *on page 4-3. If the MTS300 system still does not boot from the CD-ROM drive, contact a Tektronix, Inc. representative for assistance.*

2. After you read the displayed instructions, enter **RESTSYS** at the DOS prompt and press the **Enter** key to run the RESTSYS.BAT file.
3. Read the PowerQuest (R) EasyRestore (TM) End User License Agreement. You can press any key to continue reading through the software license.
4. After you finish reading the license agreement, click **Continue** to start the software recovery process, or click **Cancel** to exit the recovery program.
5. A Warning dialog appears to warn you that continuing the recovery process will destroy all data on the MTS300 system IDE hard drive. This is your last opportunity to exit the operating system recovery process. Click **Yes** to continue the recovery process or click **No** to exit the process.
6. When the operating system recovery starts, a window displays the progress of the recovery process. The DOS prompt returns when the process is completed. The restore process should take less than 15 minutes.

7. Remove the operating system recovery CD from the CD-ROM drive, and then reboot the MTS300 system.

8. After the MTS300 system reboots, you must perform the procedures listed in the previous *Caution* note.

Installing the MTS300 System Application Software

This section describes how to reinstall the MTS300 application software. You must install the application software if you have restored the MTS300 operating system software.

***NOTE**. You must install the Software Protection key supplied with your MTS300 system before you install the MTS300 application software. Install the Software Protection key (see Figure 4–2) on the rear-panel printer port of the MTS300 system (see Figure 1–1 on page 1–6).*

Make sure that you have the General License Password document that was supplied with your MTS300 system. You may be prompted to enter the General License password after you complete the MTS300 application software installation.

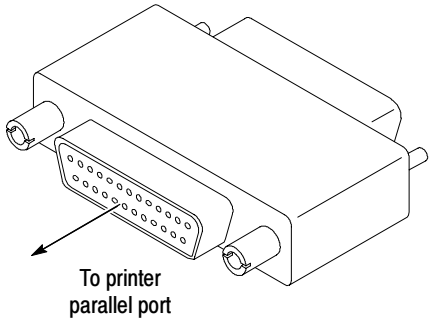

Figure 4-2: Software Protection key

Uninstalling the Existing MTS300 Application Software. If you are reinstalling the MTS300 application software without having reinstalled the operating system software, you must first uninstall the MTS300 application software before you can reinstall the software.

Perform the following steps to uninstall the MTS300 application software:

1. Boot the MTS300 system if necessary (without a recovery CD in the CD-ROM drive), or exit all open applications if the instrument is already booted.

2. Double-click the **Uninstall MTS300** icon in the Tektronix MPEG Test System program group to remove existing MTS300 application files.
3. Click **Yes** in the Confirm File Deletion message box. Click **OK** if you are notified that SNMP is being stopped.
4. Click **OK** in the Remove Programs From Your Computer dialog box when the software files have been removed, and then click **OK** in the reboot message box.
5. Reboot the MTS300 system (without a recovery CD in the CD-ROM drive).

Installing the MTS300 Application Software. If you are reinstalling the MTS300 application software without having reinstalled the operating system software, you must first uninstall the existing MTS300 applications. If necessary, perform the previous uninstall procedure before you reinstall the MTS300 application software.

Perform the following steps to reinstall the MTS300 application software:

1. Log on to the MTS300 system using the Administrator user name and password. Refer to *Logging On* on page 2–2 for more information.
2. Select **Programs | Windows NT Explorer** from the Windows NT Start menu to open the Explorer window.
3. In the Exploring window, select **(C:)** in the drive list box, and then verify that the hard disk has at least 150 MB of free space (see Figure 4–3). You cannot install the MTS300 application software on a disk that has less than 150 MB of free space. Close the Explorer window.

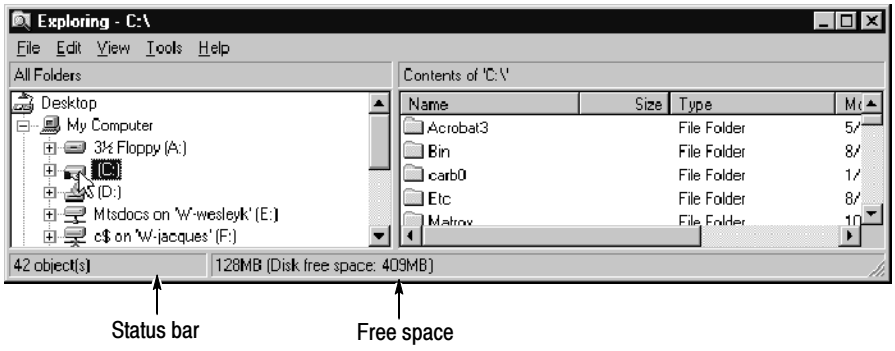

Figure 4-3: Checking the free disk space

4. Insert the *MTS300 MPEG Test System Application Software Recovery* CD into the CD-ROM drive of the MTS300 system.

5. Select **Run** from the Windows NT Start menu.
6. Enter **d:\setup.exe** in the Run dialog box, and then click **OK**.
7. Read the copyright and licensing agreement, and then click **Next**.
8. Select **MPEG Test System** in the Setup Type dialog box to restore the complete MTS300 application software, and then click Next.
9. After some files are copied, click OK in the Install message box to reboot the MTS300 system. Leave the application software recovery CD in the CD-ROM drive.
10. After the MTS300 system reboots, log on again as the Administrator as you did in step 1.
11. Click **Next** in the Second Phase of MTS300 Installation window. The installation program will show progress while files are copied.
12. Click **Yes** in the Auto Logon dialog box if you want to enable the Auto Logon feature. Click **No** if you want a manual logon process for your MTS300 system.

***NOTE**. The Auto Logon option allows you to select a user name and password that the MTS300 system will use to automatically logon to Windows NT when you power-on the instrument. You can change the Auto Logon behavior later by selecting the Auto Logon icon in the program group directory.*

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13. If you selected the Auto Logon option, enter the Auto Logon user name and password you want to use (for example, `MTS300` with no password, which is a login supplied with all test systems), and then click **OK**.
14. Click **OK** in the Registry Editor message box.
15. In the Number of I/O Ports dialog box, select **2 I/O Ports (1 Mezzanine)** or select **4 I/O Ports (2 Mezzanines)** depending on the number of I/O ports your MTS300 system has installed
16. After you select the number of I/O ports, click **Next**, and then click **OK** in the Registry Editor message box.

17. A Command Line Interpreter (CLI) window appears indicating that DSP files are being loaded. At times while this window is displayed, you may not see any activity (this can last up to two minutes).

CAUTION. *To prevent damage to the MTS300 application software, do not close the displayed CLI window while the installation is in progress. You will be able to continue when you see the* ***Press any key to continue*** *message in the window.*

18. Press any key to continue the installation program when you see the **Press any key to continue** message in the CLI window.

19. Verify that the Software Protection key is installed on the MTS300 printer port, and then click **OK** when the Information box asks you to verify that a dongle is installed.

20. Click Finish to finish the application software installation. Select the **Readme file** option to read last minute updates to the software and to read a list of known software bugs. (You can choose to view the Readme file now, or later. It is installed in `C:\MTS300\Bin`.)

21. After you read the readme file, select the **Yes, I want to restart my computer now** option.

22. Remove the *MTS300 MPEG Test System Application Software Recovery* CD from the CD-ROM drive, and then click **Finish** to reboot the MTS300 system.

NOTE*. You must reboot the MTS300 system before you can enter the General License password or before you can use the software.*

23. The software is now installed. After the MTS300 system reboots, log on again as the Administrator as you did in step 1 on page 4–26.

Entering the General License Password

When you first receive your MTS300 system, the General License password is already installed. You will have to reenter the General License password only when you restore the MTS300 operating system software, or when you purchase a software upgrade.

Perform the remaining steps to enter the General License password:

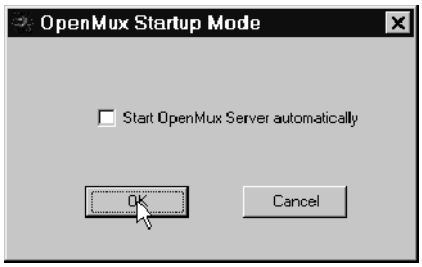
1. Double-click the **License Manager** icon in the Tektronix MPEG Test System window to start the application. The Tektronix Software Protection window appears.
2. Consult the password document supplied with your MTS300 system and identify the General License password.
3. Enter the three 6-character Hexadecimal numbers of the password in the corresponding **Tektronix Software Protection** window entry fields (lowercase characters are acceptable) and then click **OK**. A License message window appears.
4. If the password is correct, click **OK** to acknowledge the message. If you made an error entering the password, click **OK** to acknowledge the error message and return to step 2.

After you enter the correct General License password, the installation of the MTS300 application software is complete.

OpenMux Startup Mode

The OpenMux server and client are installed on each MTS300 system. If you need to reinstall the applicatin software, the default behavior of the OpenMux server is to start when the MTS300 system boots. If your system is not licensed for this application, you need to disable this feature using the following procedure:

1. Double-click the **OpenMux Mode.exe** file located in the `C:\MTS300\Bin` directory. The OpenMux Startup Mode dialog box is displayed.
2. Clear the checkbox and click **OK** as shown in the following illustration.



Now, when the MTS300 system starts, the OpenMux server will not start with the rest of the MPEG Analysis Services. If you want to enable the thirty day demonstration period for this application, use the procedure described in *Enabling the OpenMux Demonstration Period* on page 2-3.

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