

Read This First

Tektronix

**MPEG Test System
Software Version 2.5**

071-0237-01

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Read This First

This manual describes changes to the MTS 200 Series MPEG Test System that are not documented in other manuals provided with your system. Information in this manual supersedes that in all other test system documentation. This manual contains the following sections:

- Products Covered by this Manual
- New Features and Improvements
- Performance Issues

Products Covered by this Manual

The changes noted in this document apply to MTS 200 Series MPEG Test System Application Software version 2.5.

Table 1 lists the affected versions of the MTS 200 Series applications; select the **About** command on the Help menu to see the version of the current application.

Table 1: MTS 200 Series software program versions

Icon name	Program file	Version	Executable Date
Audio Stream Analyzer	Austral.exe	1.03.02	Sept. 1998
Data Store Administrator	Matracom.exe	2.3.5	Sept. 1998
Deferred-Time Analyzer	Adn_carb.exe	3.00.07	Sept. 1998
DVB Channel Coding and Decoding	Canal.exe	1.00.03EN	July 1998
DVB Table Editor	Editable.exe	2.04.02	June 1998
Error Injector	Einjwin.exe	1.02	June 1998
Jitter Adder	Gigue.exe	2.00.04	May 1998
Multiplexer	Mux_carb.exe	2.03.09	Sept. 1998
Program Stream Analyzer	Pulsar.exe	1.03.04	Aug. 1998
Real-Time Analyzer	Rta.exe	1.1	Aug. 1998
Video Stream Analyzer	Vistal.exe	1.02.01	June 1998

New Features and Improvements

Several changes have been made to the MTS 200 Series that add new capabilities, improve performance, or affect required procedures.

Software Keying

Version 2.5 of the MPEG Test System software uses a Rainbow Technologies® Sentinel SuperPro™ software key (“dongle”). Most MPEG Test System applications will start and remain operational only if the key remains attached to the parallel port of the test system computer. Software keying is transparent during normal operation and permits activating options at any time simply by entering a license password that is unique to the particular option and your key.

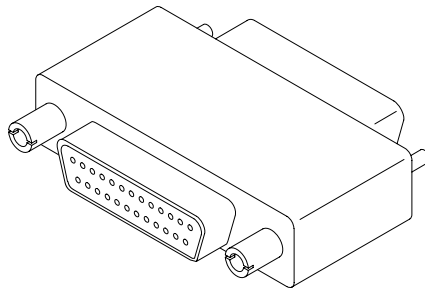


Figure 1: Software key

NOTE. Do not remove the key from the parallel port. Do not exchange keys with another test system. If you return the test system to Tektronix for upgrade or repair, always include the key.

Table 2 lists the applications that are standard in each of the MTS 200 series instruments. Note that MTS 200 series instruments are manufactured with files, icons, and menu items for all MTS applications that will work with the installed hardware, even though some applications are not standard with that test system model (or option). You can try all unlicensed applications free of charge for thirty days; see *Demonstration License* on page 5 for further information.

Table 2: Standard applications

Instrument	Licensed applications
MTS 215	Data Store Administrator Deferred-Time (MPEG-2 System) Analyzer DVB Table Editor DVB Channel Coder/Decoder Jitter Adder Multiplexer Real -Time Analyzer
MTS 210 Option AG	Data Store Administrator Deferred-Time (MPEG-2 System) Analyzer DVB Table Editor DVB Channel Coder/Decoder Jitter Adder Multiplexer
MTS 210 Option 1A	Data Store Administrator Deferred-Time (MPEG-2 System) Analyzer DVB Table Editor DVB Channel Coder/Decoder Jitter Adder
MTS 210 Option 1G	Data Store Administrator DVB Table Editor DVB Channel Coder/Decoder Jitter Adder Multiplexer
MTS 205	Real -Time Analyzer

Software Options

Three new options, Option CA, Option ES, and Option PS are available with MPEG Test System software version 2.5.

- Option CA adds Conditional Access and Scrambling (Viaccess) management capabilities to the MPEG2 System (Deferred-Time) Analyzer and the Multiplexer. You can add these capabilities to your MTS 210 or MTS 215 at any time by installing upgrade kit MTS2F08. Contact your Tektronix representative for further information.
- Option ES adds Audio and Video Elementary Stream Analyzers. If you did not purchase this option with your MTS 200 Series MPEG Test System, you

can add these deferred-time analysis applications by installing upgrade kit MTS2F07. Contact your Tektronix representative for further information.



CAUTION. *The elementary stream analyzers are also available as MTS2ES, a stand-alone software product intended for installation on personal computers running Windows NT 4.0. You cannot install MTS2ES on a Tektronix MTS 100 or MTS 200-series test system. To add the elementary stream analyzers to your MPEG Test System, order MTS2F07; please contact your Tektronix representative for additional information.*

- Option PS adds the deferred-time Program Stream Analyzer. If you did not purchase this option with your MTS 200 Series MPEG Test System, you can add the application by installing upgrade kit MTS2FPS. Contact your Tektronix representative for further information.



CAUTION. The Program Stream Analyzer is also available as PSA200, a stand-alone software product intended for installation on personal computers running Windows NT 4.0. You cannot install PSA200 on a Tektronix MTS 100 or MTS 200-series test system. To add the Program Stream Analyzer to your MPEG Test System, order MTS2FPS; please contact your Tektronix representative for additional information.

Demonstration License

For your convenience, MTS200 series instruments are manufactured with files, icons, and menu items for all MTS applications that work with the installed hardware, even though some applications may not be licensed for use with your test system model. If you want to try one or more of the optional applications, you can activate a Demonstration License that enables all unlicensed applications for thirty days.

Activating the Demonstration License. When you attempt to start any unlicensed application, the **License Management** dialog box opens.



Consult the password document supplied with your MPEG Test System product and identify the Demonstration Password. To activate the Demonstration License, enter the eight-digit password in the **License Management** dialog box and then click **OK**. Once you have correctly entered your Demonstration Password, all unlicensed or optional applications are available for the following thirty days.

NOTE. *The Demonstration License applies to all unlicensed applications concurrently and cannot be renewed. Be sure to try all applications of interest within thirty days of activating the license.*

Documentation. The *MPEG Test System Version 2.5 Installation Software CD ROM* contains user manuals for all MPEG Test System applications in Adobe Acrobat (PDF) format. You can read and print the manuals with the Acrobat Reader, which is also included. For additional information about the manuals and installing the reader, refer to the Readme.txt file in the \Manuals folder on the CD ROM.

Version 2.5 Software Enhancements

Deferred-Time (MPEG2 System) Analyzer. Version 2.5 of the software adds the following new features to the MPEG System Analyzer:

- In many cases, pressing **ESC** (when the appropriate view is selected) interrupts the current process.
- An enhanced hierarchic error message display has replaced the error message listing.
- User-definable buffers have been added for T-STD and LTW analysis.

Real-Time Analyzer. Version 2.5 of the software adds the following new features to the Real-Time Analyzer:

- A DEN (Data Enable) signal on parallel input can be recognized.
- An external TTL-level trigger signal can start/stop data storage.
- The algorithm for PCR probes has been changed to increase accuracy and to measure frequency offset, drift rate, and average PCR rate.
- Output filtering is now independent of data storage.
- Data storage has been refined and many new data storage start/stop options have been added.
- All analyses can be disabled.
- Conditional Access service is displayed in the Statistic view.
- DVB-MG error indicators have been added to the status bar.
- DVB-MG error messages can be viewed with a double-click on an error indicator in the DVB-MG view.
- A hierarchic sub-view has been added to the section analysis view.
- You can now open a **Rate Interval** window for setting Transport Rate error thresholds by right-clicking in the PID Allocation view.
- An optional scrolling mode has been added for all graphic views.

Version 2.5 Software Improvements

Version 2.5 fixes the following performance issues reported for the Version 2.2 software release:

All Applications

Reference 17278: MPEG Test System software version 2.5 has been verified to be Year 2000 compliant.

MPEG2 System (Deferred-Time) Analyzer

Reference N/A: In previous versions, PCR Analysis used the previous PCR as the reference point to calculate the error in the current PCR. This method resulted in misleading error calculations for some PCR jitter functions. The new PCR algorithm resolves this issue.

Reference 08669: Previous versions reported no more than 1000 errors, which could lead to unreported errors. The number of possible error messages is virtually unlimited in version 2.5.

Reference 18753, 19444: The DTA can now handle up to 250 elementary cell IDs in the a PMT mosaic descriptor. Previous versions would crash on more than 100 elementary cell IDs.

Reference 19740: The DTA no longer reports errors on PES start_code in transport packet databyte for audio and data. According to ISO/IEC 13818-1 Annex G, PES start_code emulation is possible in audio and data elementary streams.

Multiplexer

Reference 20724: The Multiplexer no longer crashes on loop section data. In previous versions, the multiplexer could not multiplex the loop section data when the loop section data length was a pattern of $184+n*183$ bytes because an internal access error caused an access violation.

Data Store Administrator

Reference 14676: The Data Store Administrator (DSA) now provides size and offset for reading a file from the data store system to the computer system disk. This feature can be used to break up large transport streams stored on the data store system and uploaded to the PC system disks.

Reference 20978: Interrupting disk compression in previous versions of the Data Store Administrator could result in some ghost files named GHOSTFILE 000 added to the **File information** list. This version of the DSA eliminates this behavior.

Real-Time Analyzer

Reference N/A: The Data storage menu and Data Storage Start/Stop settings tab no longer appear in the MTS 205, which does not contain the Data Store system.

Reference 14966: The Real-Time Analyzer output was active only when Data Storage was started. In version 2.5, the output is active whenever Analysis is occurring.

Reference 15444: If the application quit with an Exception Access Violation or Application Error during Data Store acquisition (recording to the Data Store disks), the RTA would not permit future acquisitions.

Reference 18574: The RTA can now accommodate PCR frequencies up to 128Hz, twice the speed of previous versions.

Performance Issues

This section describes problems you might encounter while using version 2.5 and describes how to minimize or eliminate the impact on product operation.

MTS2ES

The MTS2ES is a stand-alone software product intended for installation on personal computers running Windows NT 4.0. You *cannot* install MTS2ES on a Tektronix MTS 100 or MTS 200-series test system. To add the elementary stream analyzers to your MPEG Test System, order MTS2F07; please contact your Tektronix representative for additional information.

Executable ADN_CARB (MPEG2 System Analyzer)

Reference N/A: While analyzing large transport stream files, the analyzer can appear to be busy with no indication of progress; in addition, the message window can obscure the “Press Escape to abort” reminder. Analysis of large transport stream files can take many minutes; press **ESC** to suspend or abort most MPEG2 System Analyzer operations.

Reference 3373: When displaying a large font, some characters are displayed badly (or not at all) in the packet views. Use a smaller font.

Reference 17277: Streams generated with the MPEG Test System Multiplexer application can cause buffer overflow during Dynamic Analysis with the MPEG2 System (deferred-time) Analyzer. This can occur because the Dynamic Analysis algorithm uses the “Leak method” to transfer video elementary stream data from the main buffer (MB n) to the elementary stream buffer (EB n); therefore, buffer overflow can occur when analyzing streams—such as those created with the Multiplexer application—that require “VBV delay method” data transfer.

Refer to ISO/IEC 13818–1 for additional information about leak method and VBV delay method buffering.

Reference 20888: The Deferred-Time MPEG2 System Analyzer cannot analyze transport streams longer than 2,147,483,647 bytes (one byte less than 2.0 Gbytes).

If you have captured a larger transport stream file on the data store disks and want to analyze a portion of the stream, you can read a 2.0 Gbyte or smaller section of the file from the data store disks to the system disk. For example, to transfer the last 1.0 Gbytes of a 4,147,058,688 byte file to the system disk, select the file from the Data Store Administrator **File information** list, click the **R** command button, and then set the offset in the **File Read from CARB** dialog box to 3,147,058,688 bytes.

Reference 20994: T-STD analysis of 4:2:2 video is not implemented. When a T-STD analysis is performed on a program, the simulation for any 4:2:2 video is skipped.

Executable AUSTRAL (Audio Stream Analyzer)

Reference 19437: The Audio Stream Analyzer can “add” audio frames to the end of a stream when analyzing an MPEG-1 audio stream from an MPEG-1 system stream directly through the Program Stream Analyzer hierarchic view. The application does not exhibit this error when analyzing a stream that has been saved to a (*.aud) file.

When analyzing MPEG-1 audio directly from the PSA, ignore errors reported for the last few frames; if necessary, use the PSA to save the stream to a file and then open that file from within the Audio Stream Analyzer application window.

Executable EDITABLE (Table Editor)

Reference 20810:All Table Editor command buttons and menu items (except **Exit** on the File menu) can become disabled in some circumstances. To regain use of the application, either minimize and then restore the Table Editor application window or exit and restart the application.

Executable MATRACOM (Data Store Administrator)

Reference N/A: There are limitations when generating a stream from the looping partition. The partition is divided into two sections, “first valid window” and “second valid window,” which are demarcated by the “offset” value. The offset value is based on where the acquisition was terminated. For example if the partition is 10 Mbytes and the offset is 7.5 Mbytes, the valid windows will be 7.5 Mbytes and 2.5 Mbytes long (0 to 7864320 bytes and 7864321 to 10485759 bytes).

A generated stream from the looping partition cannot span the offset point, nor can it cross the ends of the partition. Therefore, you can generate only from the beginning of the file to the offset point. The loop partition is most useful for acquisition.

Reference 3479: During ECL serial slave generation, when the master uses just one stuffing byte, the generation does not terminate if the file sizes match. The transfer percentage reaches 100% and generation continues. Generation will terminate properly if the master uses no stuffing bytes or from 2 to 16 stuffing bytes.

Reference 12699: All four Data Store disks must read/write at the rate required for acquisition and generation. As a disk ages, its performance can degrade until it cannot always read/write quickly enough for the highest Data Store acquisition and generation rates—even though it continues to meet the disk manufacturer’s specification for average access speed. One degraded disk can prevent acquisition or generation at high data rates; in these circumstances, a “Disk *n* too slow” (where *n* is the number of the inadequate disk) error message appears.

Replace the slow disk to restore the Data Store system’s ability to acquire and generate at the desired data rate.

Reference 21170: The Data Store Analyzer **Disk Motor Control** Service menu commands are not available in this version of the software. The information about these commands in the *Data Store Administrator Reference* section of the *MPEG Test System Deferred-Time Applications User Manual* is incorrect.

Reference 21171: When you define a file size for acquisition to the Single Shot data store partition, the available partition size is always reduced by the defined number of bytes even if you stop acquisition before the entire file is received. For example, if you enter 2 000 000 000 bytes in the **Size** field of the **ACQUISITION** dialog box, the available size after acquisition is always 2 000 000 000 bytes less than before acquisition even if you stop the process when only a few Mbytes have been received. As a result, the sum of the **Available size** and all file sizes reported on the **File information** list will not equal the total partition size.

Whenever you stop data store acquisition before an entire file has been received, always compress the data store disks (select **Compress Disks** from the Service menu) to recover the unavailable disk space.

Executable MUX_CARB (Multiplexer)

Reference 20874: Once you add an unformatted data stream to a program, you cannot later change the stream data format to “Section” or “Loop sections.”

If you do not set the data stream format in the **Data Stream** window to Section or Loop Sections when you first associate a data file with a DATA icon, the default selection (Without Format) is used. Changing the format later to Section or Loop Section does not cause the application to multiplex the data in Section or Loop Section format. The intended section format is displayed in the data stream dialog, but the multiplexed result is incorrect.

To correct erroneous data format, delete the DATA icon from the hierarchic view, add a new icon, and again select the data file, taking care to specify the correct (Section or Loop sections) format.

Executable PULSAR (Program Stream Analyzer)

Reference 14197: The Program Stream Analyzer can freeze when you perform an automatic analysis on an MPEG1 program stream that has been opened in MPEG2 mode. The problem is indicated by the error message “Too many Access Unit” in a **Nb Access Unit** window; the window does not close, even after repeated acknowledgement.

To recover from this error, press **CTRL+ALT+DEL** to open the **Windows NT Security** window and then use the Task Manager to end the Video Stream Analyzer task. Start the application again and then, when opening the file again for analysis, be sure to select **MPEG1 System Streams** in the “List files of type” field of the **Open** dialog box.

Executable RTA (Real-Time Analyzer)

Reference N/A: When using the deferred-time Analyzer to examine a partial, filtered, transport stream captured with the RTA, timing analysis is not advised for the following reasons:

- The deferred-time Analyzer cannot compute the bit rate if the first PMT declared in the PAT has no PCR information, which occurs when the corresponding PID has been filtered by the Real-Time Analyzer.
- Even if you input the correct overall bit rate, all information related to timing (PCR, PTS/DTS, section rates, and dynamic analyses) can be incorrect because the time distribution of the packets repartition is lost when filtered data is captured. PCRs, for example, will be incorrect because they are computed at the source on the complete stream, not on a filtered part of it.

If you intend to perform in-depth timing analysis of a captured stream, always select **No filtering mechanism** on the Data Storage Configuration tab of the RTA **Settings** window.

Reference 15158: Occasionally, while the RTA is rapidly updating the Hierarchic view, the application may exit with an Application Error or Exception Access Violation when a mouse-click is performed somewhere in the Hierarchic view. There is no known way to avoid this, but restarting the application will restart the analysis.

Reference 19930: To save, load (restore), or delete Real-Time Analyzer configuration profiles, you must be logged in to Windows NT as a user that is a member of either the Administrators user group or the Backup Operators user group. To restore or delete a profile, you must be logged in as the user who saved the profile.

The default user in the standard MTS 200 series V2.5 configuration, “MTS100,” is a member of the Backup Operators group. To add a user or change the group memberships of a user, log in as the administrator and select the User Manager application from the Windows NT Start/Programs/Administrative Tools (common) subdirectory. Refer to the Windows NT documentation for additional information about the User Manager application.

Reference 20354: If a PAT (Program Allocation Table) is spread into multiple rotating sections, and each section references one program, the RTA is unable to identify the complete PAT. The hierarchical view will display only one identified section, and programs described in other PAT sections are displayed as ghosts.

Reference 20616: Files acquired through RTA data storage are always truncated to a multiple of $24064 * N$ bytes, where N is the number of data store disks. In a standard MTS 200 Series test system, therefore, the saved file size must be an exact multiple of 96256 bytes, and the resulting file can be up to 96255 bytes smaller than the total size specified in the **Before Event** and **After Event** settings fields.

Reference 20618: During data storage, the test system must first acquire the event trace data and then rewrite that data to a contiguous file at the beginning of the free space on the data store disks. As a result, the time required to capture an event trace file—from stop condition detection to the appearance of the “Data are stored...” message—can be up to twice the time required to receive the event trace data. In extreme circumstances, such as saving 16 Gbytes of input immediately following a stop condition, data storage through the RTA can take more than one hour.

Be aware of this limitation when configuring the RTA to store a large event trace file; you cannot run the Data Store Administrator, Deferred-Time Analyzer, or Multiplexer applications during RTA data storage. Remember that you can use the Data Store Administrator to save input directly to the data store disks.

Reference 20945: If DSA is generating, the Data Storage Start/Stop setting of the RTA sometimes is unstable. The maximum available data storage sometimes returns 0, and occasionally causes RTA crash with an access violation error. The reason is that the data store is busy and unable to response to request from RTA. Always stop generation before changing RTA Data Storage settings.

Reference 20977: During RTA data storage, conflicts between automatic event trace file names can prevent data storage. When this happens, an error message (“Data Storage -> File already exists”) appears in the application window.

File name conflicts can occur because the RTA stores file capture sequence counters in the current Windows NT registry profile of the current user and also

uses the current values when saving settings to a configuration profile. Thus it is possible to save MnStp00.trp, for example, while logged on as one user and subsequently attempt to save the same file while logged on as another user; it is also possible to save DVBLv100.trp, for example, restore the standard configuration, and again attempt to save DVBLv100.trp (because all sequence counters in the standard configuration are 00). In either case, data storage fails and the error message appears.

To remove a filename conflict, you must remove the file name from the Data Store Administrator (DSA) **File information** list. To do so, delete the file and, if the file is not last on the **File information** list, compress the disks. Refer to the MPEG Test System Deferred-Time Applications User Manual for information about using the Data Store Administrator application.

Executable VISTAL (Video Stream Analyzer)

Reference 20331: The Video Stream Analyzer can freeze when simultaneously analyzing the same video stream in two separate main views. The behavior has been noticed in cases when the first analysis is of the stream saved (to a .vid file) from the Program Stream Analyzer application (PSA) and the second analysis is of the stream via the video stream icon in the PSA hierarchic view.

In the unlikely event that you experience this error, press **CTRL+ALT+DEL** to open the **Windows NT Security** window and then use the Task Manager to end the Video Stream Analyzer task.

