# Instructions

**Tektronix**

## MTS300 Software Field Upgrades MTS3FDT, MTS3FOC, MTS3FES, MTS3FPS, MTS3FAC, & MTS3FOM

## 075-0549-00

**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**

## Contacting Tektronix

| | |
|---|---|
| Phone | 1-800-833-9200* |
| Address | Tektronix, Inc.<br>Department or name (if known)<br>14200 SW Karl Braun Drive<br>P.O. Box 500<br>Beaverton, OR 97077<br>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: support@tektronix.com<br><br>1-800-833-9200, select option 3*<br>1-503-627-2400<br><br>6:00 a.m. – 5:00 p.m. Pacific time |

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\*    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.

# Kit Description

This kit provides the software-license password document and instructions to upgrade the software on your existing MTS300 MPEG Test System or on your existing MTS300 Software Only product.

These instructions apply for the following MTS300 software field upgrades:

- MTS3FDT        (MPEG-2 Deferred Time Analysis System)

- MTS3FOC        (ViAccess Conditional Access)

- MTS3FES        (MPEG-2 Audio/Video Elementary Stream Analyzers)

- MTS3FPS        (Program Stream Analyzer)

- MTS3FAC        (MPEG-2 Dolby Digital (AC-3) Analyzer)

- MTS3FOM[1]     (OpenMux Real-Time Multiplexer)

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[1]   The MTS3FOM software field upgrade is available only for MTS300 MPEG Test System instruments. You cannot upgrade a MTS300 software-only product with the MTS3FOM software field upgrade.

# Kit Parts Lists

Tables 1 through 6 list the items that are shipped with the various MTS300 software field upgrades covered by this kit.

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*NOTE. The* MTS300 Stream Creation Applications User Manual *(Tektronix part number 071-0778-XX), which was supplied with your original MTS300 instrument or software-only product, contains user information for the applications enabled by the MTS3FDT, MTS3FOC, and MTS3FOM upgrades.*

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**Table 1: MTS3FDT parts list**

| Quantity | Part number | Description |
|----------|-------------|-------------|
| 1 EA | NS | BOX, SHIPPING; 12.50 X 9.0 X 3.0 INCHES |
| 1 EA | NS | DATA SHEET; SOFTWARE KEY INFORMATION |
| 1 EA | 063-1914-00 | SOFTWARE PKG; MPEG2 ELEMENTARY STREAMS CD-ROM |
| 1 EA | 071-0659-00 | MANUAL, TECH, USER; MPEG-2 DVB/ATSC SYSTEM ANALYZER |
| 1 EA | NS | MANUAL, TECH, INSTALLATION; MTS300 SOFTWARE FIELD UPGRADES |
| 1 EA | 063-2927-00 | SOFTWARE PKG; CD-ROM, STRM102 |
| 1 EA | 070-9644-01 | MANUAL, TECH, USER; STRM100/STRM101/STRM102 |
| 1 EA | NS | FORM, PRINTED; SOFTWARE LICENSE AGREEMENT |
| 1 EA | NS | REGISTRY CARD SITE LICENSE, MAIL BACK REGISTRATION CARD; STRM100 |

**NS – Not Saleable**

**Table 2: MTS3FOC parts list**

| Quantity | Part number | Description |
|----------|-------------|-------------|
| 1 EA | NS | BOX, SHIPPING; 12.50 X 9.0 X 3.0 INCHES |
| 1 EA | NS | DATA SHEET; SOFTWARE KEY INFORMATION |
| 1 EA | NS | MANUAL, TECH, INSTALLATION; MTS300 SOFTWARE FIELD UPGRADES |

**NS – Not Saleable**

**Table 3: MTS3FES parts list**

| Quantity | Part number | Description |
| --- | --- | --- |
| 1 EA | NS | BOX, SHIPPING; 12.50 X 9.0 X 3.0 INCHES |
| 1 EA | NS | DATA SHEET; SOFTWARE KEY INFORMATION |
| 1 EA | 071-0663-00 | MANUAL,TECH; USER, AUDIO STREAM ANALYZER |
| 1 EA | 071-0664-00 | MANUAL,TECH; VIDEO ELEMENTARY STREAM |
| 1 EA | NS | MANUAL, TECH, INSTALLATION; MTS300 SOFTWARE FIELD UPGRADES |

**NS – Not Saleable**

**Table 4: MTS3FPS parts list**

| Quantity | Part number | Description |
| --- | --- | --- |
| 1 EA | NS | BOX, SHIPPING; 12.50 X 9.0 X 3.0 INCHES |
| 1 EA | NS | DATA SHEET; SOFTWARE KEY INFORMATION |
| 1 EA | 071-0662-00 | MANUAL, TECH, USER; MTS300 PROGRAM STREAM ANALYZER |
| 1 EA | NS | MANUAL, TECH, INSTALLATION; MTS300 SOFTWARE FIELD UPGRADES |

**NS – Not Saleable**

**Table 5: MTS3FAC parts list**

| Quantity | Part number | Description |
| --- | --- | --- |
| 1 EA | NS | BOX, SHIPPING; 12.50 X 9.0 X 3.0 INCHES |
| 1 EA | NS | DATA SHEET; SOFTWARE KEY INFORMATION |
| 1 EA | 071-0661-00 | MANUAL, TECH, USER; MTS300 AC-3 AUDIO STREAM ANALYZER |
| 1 EA | NS | MANUAL, TECH, INSTALLATION; MTS300 SOFTWARE FIELD UPGRADES |

**NS – Not Saleable**

**Table 6: MTS3FOM parts list**

| Quantity | Part number | Description |
| --- | --- | --- |
| 1 EA | NS | BOX, SHIPPING; 12.50 X 9.0 X 3.0 INCHES |
| 1 EA | NS | DATA SHEET; SOFTWARE KEY INFORMATION |
| 1 EA | NS | MANUAL, TECH, INSTALLATION; MTS300 SOFTWARE FIELD UPGRADES |

**NS – Not Saleable**

# Installation Instructions

The installation procedure is the same for all of the MTS300 software field upgrades. The upgrades differ in which applications are activated when you enter the General License Password. Refer to *Licensed Applications* on page 7 for a list of the applications that are included with each software field upgrade.

## Verifying the Existing Installation

The installation of the MTS300 software field upgrades requires that your existing installation of the MPEG Test System software includes icons for each of applications that will be enabled with this software upgrade. Figure 1 shows the Tektronix MPEG Test System program group window containing icons representing all of the applications supplied with MTS300 software version 5.0.

Verify that your existing Tektronix MPEG Test System program group window contains the application icons that will be enabled with your software upgrade. Refer to *Licensed Applications* on page 7 for a list of the applications included with each of the MTS300 software field upgrades.

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**NOTE**. *If your current MTS300 installation is missing any of the application icons that will be enabled with your software upgrade, you must reinstall MTS300 software version 5.0 before the MPEG Test System application purchased with this upgrade can be enabled. Refer to your existing MTS300 documentation for instructions on how to reinstall the application software.*
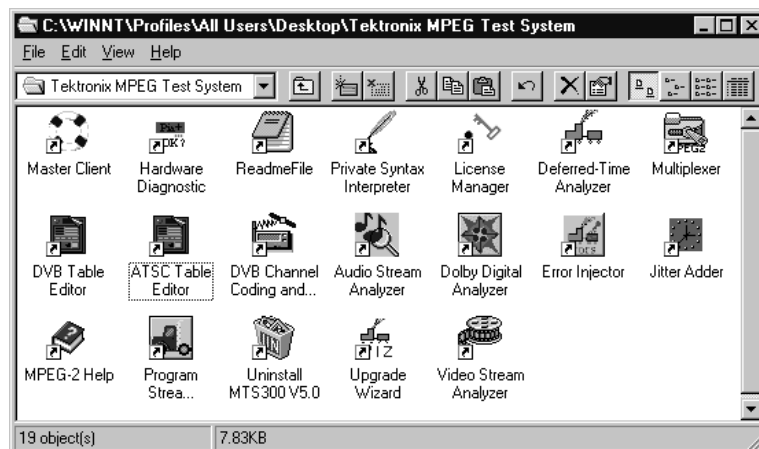
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**Figure 1: MTS300 MPEG Test System version 5.0 program group window**

# Entering the General License Password

Perform the following steps to enter the General License Password supplied with this upgrade kit. Doing so enables the applications you purchased with your MTS300 software field upgrade.

*NOTE. The General License Password supplied with this software upgrade kit supercedes the password supplied with your original MTS300 installation. Discard the original password document and use the new General License Password supplied with this kit when you need to reinstall the MTS300 application software.*

1. Verify that the software protection key supplied with your original MTS300 installation is installed on the parallel port of the MTS300 instrument or on the parallel port of the computer containing the MTS300 software-only product.

*NOTE. You will not be able to upgrade the MTS300 application software if the software protection key is not installed.*

2. Double-click the **License Manager** icon in the Tektronix MPEG Test System window to start the application. The Tektronix Software Protection window appears.

3. Consult the password document supplied with this MTS300 software upgrade and identify the General License Password.

4. 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.

5. 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 3.

6. After you enter the correct General License Password, reboot your MTS300 instrument or computer.

The installation of your MTS300 software field upgrade is now complete. You can verify that the software installed properly by performing the appropriate procedure(s) located in *Verifying the Installation* on page 9.

# Licensed Applications

The following applications are included with all Tektronix MTS300 MPEG Test Systems and MTS300 software-only products:

■ License Manager

■ Error Injector

■ MPEG-2 Help

■ Uninstall MTS V5.0

The General License Password included in this kit enables additional applications that correspond to the MTS300 software field upgrade you purchased as listed in Table 7. You can sample the remaining applications free of charge for thirty days; refer to *Demonstration License* on page 8 for more information.

**Table 7: Licensed applications**

| Product | Licensed applications |
|---------|----------------------|
| MTS3FDT | Deferred-Time Analyzer |
| | Multiplexer |
| | DVB Channel Coder/Decoder |
| | DVB Table Editor |
| | ATSC Table Editor |
| | Jitter Adder |
| MTS3FOC | NA (adds ViAccess Conditional Access to your existing Deferred-Time Analyzer and Multiplexer applications) |
| MTS3FES | Audio Stream Analyzer |
| | Video Stream Analyzer |
| MTS3FPS | Program Stream Analyzer |
| MTS3FAC | Dolby Digital (AC-3) Audio Analyzer |
| MTS3FOM[1] | OpenMux (Real-Time Multiplexer) |

[1] **The MTS3FOM software field upgrade is available only for MTS300 MPEG Test System instruments. You cannot upgrade a MTS300 software-only product with the MTS3FOM software field upgrade.**

To delete the icon of an unlicensed application from the Tektronix MPEG Test System program group, select (highlight) the icon, press **DEL**, and click **Yes** in the resulting message window.
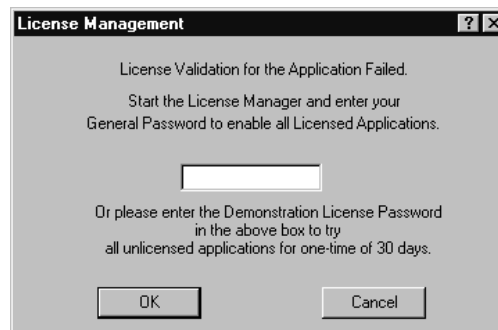
To remove an unlicensed application from the Start/Programs/Tektronix MPEG Test System menu, start Windows NT Explorer and open the following path:

```
c:\Winnt\Profiles\All Users\Start Menu\Programs\Tektronix
MPEG Test System
```

Then drag the application shortcut from the right-hand **Exploring** window pane to the Windows NT Recycle Bin. Refer to your Windows NT documentation for more information about changing the appearance or contents of the desktop, program groups, and the Start menu.

# Demonstration License

The setup application installs files, icons, and menu items for all MTS300 applications listed in the previous section, even though some applications are not standard with your product. You can activate a Demonstration License to enable all unlicensed applications for thirty days. When you attempt to start an unlicensed application, the **License Management** dialog box opens.



Consult the password document supplied with your MTS300 MPEG Test System product and identify the Demonstration Password. To activate the Demonstration License, enter the eight-character hexadecimal password in the **License Management** dialog box, and then click **OK**. Once you have correctly entered the Demonstration Password, all unlicensed or optional applications are available for the following thirty day period.

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**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.*

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To purchase additional MTS300 applications or options, please contact your Tektronix representative or nearest Tektronix field office.

# Verifying the Installation

After you complete the installation of the MTS300 application software, use the procedures in this section to verify the operation of your licensed applications.

**MTS3FDT**    MTS3FDT enables both the Multiplexer and Deferred-Time Analyzer applications. Perform the following steps to verify the operation of these applications (notice that you cannot run both applications simultaneously):

1.  Double-click the **Deferred-Time Analyzer** icon in the Tektronix MPEG Test System program group window to start the application.

2.  Select **Open** from the MPEG2 System Analyzer File menu and open the following transport stream file: `c:\Mts300\Cfg-trp\Sample.trp`.

3.  Verify that a **Hierarchic View of Sample.trp** window opens within the MPEG2 System Analyzer application window.

4.  Exit the MPEG2 System Analyzer application.

5.  Double-click the **Multiplexer** icon in the Tektronix MPEG Test System program group window to start the application.

6.  Select **Open** from the Multiplexer File menu and open the following configuration file: `c:\Mts300\Cfg-trp\Default.cfg`.

7.  Exit the Multiplexer application.

**MTS3FOC**    MTS3FOC enables ViAccess Conditional Access, which adds scrambling/CA capabilities to both the Multiplexer and Deferred-Time Analyzer applications. Perform the following steps to verify the operation of this option:
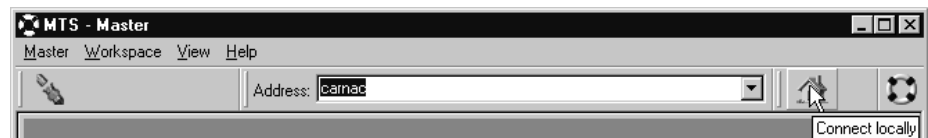
1.  Double-click either the **Deferred-Time Analyzer** icon or the **Multiplexer** icon in the Tektronix MPEG Test System program group window to start one of the applications.

2.  Verify that the **Conditional access license...** command is no longer present on the Options menu of the just-started application. In the Deferred-Time Analyzer application, **Unscrambling** is now the third command in the menu; in the Multiplexer application, **Scrambling** is the second command in the menu. The Multiplexer **Scrambling** command is available when a new or existing configuration file is open.

3.  Exit the application you opened in step **1** of this procedure.

**MTS3FES**   MTS3FES enables both the Audio Stream Analyzer and the Video Stream Analyzer applications. Perform the following steps to verify the operation of these applications:

1. Double-click the **Audio Stream Analyzer** icon in the Tektronix MPEG Test System program group window to start the application.

2. Select **Open** from the Audio Stream Analyzer File menu and open one of the **\*.mp2** files in the following directory: `c:\Mts300\Audio`.

3. Verify that both a **First Level View** and a **Characteristics** window open within the Audio Stream Analyzer application window.

4. Exit the Audio Stream Analyzer application.

5. Double-click the **Video Stream Analyzer** icon in the Tektronix MPEG Test System program group window to start the application.

6. Select **Open** from the Video Stream Analyzer File menu and open one of the **\*.mp2** files in the following directory: `c:\Mts300\Video\525` (or \625).

7. Verify that both the **Main view** window and a window containing **MAIN CHARACTERISTICS** open within the Video Stream Analyzer application window.

8. Exit the Video Stream Analyzer application.

**MTS3FPS**   MTS3FPS enables the Program Stream Analyzer application. Perform the following steps to verify the operation of this application:

1. Double-click the **Program Stream Analyzer** icon in the Tektronix MPEG Test System program group window to start the application.

2. Select **Open** from the File menu.

3. In the Open dialog box, select **MPEG2 Program Stream** in the **List files of type** list box.

4. In the Open dialog box, select **Sample.pck** from the following directory: `c:\Mts300\Pstream`.

5. Verify that a **Hierarchic View** window opens within the application window showing the selected program stream.

6. Exit the Program Stream Analyzer application.

**MTS3FAC**     MTS3FAC enables the MPEG-2 Dolby Digital (AC-3) Audio Analyzer application. Perform the following steps to verify the operation of this application:

1.  Double-click the **Dolby Digital Analyzer** icon in the Tektronix MPEG Test System program group window to start the application.

2.  Select **Open** from the File menu and open one of the **\*.ac3** files in the following directory: `c:\Mts300\Audio`.

3.  Verify that both a **Frame View** and a **Main Characteristics** window open within the application window.

4.  Exit the Dolby Digital Analyzer application.

**MTS3FOM**     MTS3FOM[2] enables the OpenMux application. Perform the following steps to verify the operation of this application:

1.  Open the Master Client application by double-clicking the **Master Client** icon in the Tektronix MPEG Test System program group window.

2.  Click the **Connect locally** button on the toolbar as shown below. The Master Client application now displays the available I/O ports showing that you are connected to a Server Manager (in this case the local Server Manager).



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[2]     The MTS3FOM software field upgrade is available only for MTS300 MPEG Test System instruments. You cannot upgrade a MTS300 software-only product with the MTS3FOM software field upgrade.

**3.** In the Master Client Port Manager panel, right click the I/O port from which you will output the transport stream, point to **Assign Server** in the popup menu, and then select **OpenMux** from the submenu.

The Free icon will change to the OpenMux icon. In the following illustration, the OpenMux server is being assigned to I/O port 2.
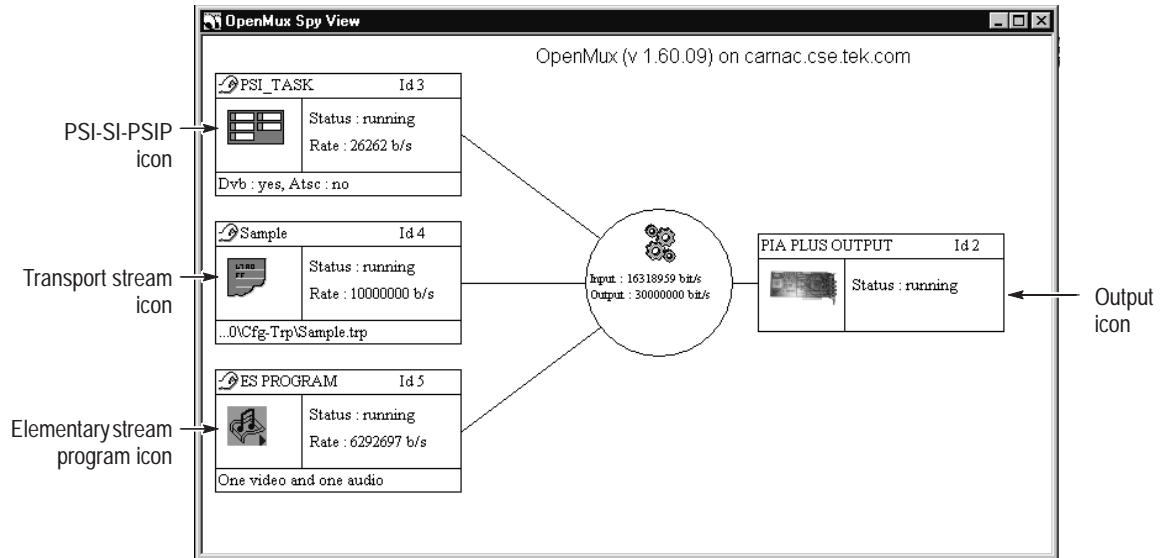


**4.** Right-click the **OpenMux** icon in the Port Manager panel, and select **Launch OpenMux Configuration Client** from the popup menu. The OpenMux Spy view is displayed. The first time the OpenMux Spy View is displayed, the window is blank except for the server icon in the center of the window.

**5.** Select **Multiplex Rate** from the Multiplex menu.

**6.** Enter **30000000** Bits/s in the Multiplex Rate text box, and then click **OK**. The multiplex rate is updated in the OpenMux Spy view.

**7.** Select **Add Input** from the Input menu, and then select **PSI-SI-PSIP** from the submenu. The Advanced PSI dialog box is displayed.

**8.** Click **Apply** to accept the default values and close the dialog box. The PSI-SI-PSIP input icon is added to the OpenMux Spy view.

**9.** Select **Add Input** from the Input menu, and then select **Transport File** from the submenu. The Input File dialog box is displayed.

**10.** Click **Browse** and use the Select Transport Stream dialog box to select the following transport stream file: `c:\Mts300\Cfg-trp\Sample.trp`.

**11.** Click **Apply** to accept the default values and close the dialog box. The Transport Stream icon is added to the OpenMux Spy view.

12. Select **Add Input** from the Input menu, and then select **ES Program** from the submenu. The ES Program dialog box is displayed.

13. In the ES Program dialog box, click **Browse** in the MPEG-2 Video Component group. Use the Select Video File dialog box to select the following video elementary stream file:
    `c:\Mts300\Video\525\Mobl_060.mp2`.

14. In the MPEG-2 Audio Component group, ensure that the **Add Audio Component** check box is selected.

15. Click **Browse** in the MPEG-2 Audio Component group and use the Select Audio File dialog box to select the following audio elementary stream file:
    `c:\Mts300\Audio\10khz.mp2`.

16. Click **OK** to accept the changes and close the dialog box. A Program icon is added to the OpenMux Spy view.

17. In the OpenMux Spy view, double-click the **Transport Stream** icon (labeled Sample). The Control View window for the input is displayed.

18. In the Control View window, click the ▶ (Start) button.

19. Close the Control View window.

20. In the OpenMux Spy view, double-click the **Elementary Stream Program** icon (labeled ES Program). The Control View window for the input is displayed.

21. In the Control view, click the ▶ (Start) button.

22. Close the Control View window.

**23.** Start the multiplex by selecting **Start Multiplex** from the Multiplex menu or by clicking the ▶ (Start Multiplex) button on the toolbar.

You are now generating a simple transport stream using the inputs you specified. The OpenMux Spy view should look similar to the following illustration.



**24.** Verify the signal output:

    **a.** In the OpenMux Spy view, right-click the **Output** icon and verify the popup menu contains the following entries:

        ■   Hierarchic View

        ■   Program Multiplex Allocation

        ■   PID Multiplex Allocation

    **b.** Select **PID Multiplex Allocation** from the popup menu. The PID Multiplex Allocation View is displayed.

    **c.** In the PID Multiplex Allocation view, verify that the rate for PID 50 is approximately 20.5 % of the total multiplex rate (roughly 6.13 Mbps).

**25.** Exit the OpenMux application, and then exit the Master Client application.

■■   **End of document**   ■■