MTM400, MTM400A, and RFM300
DTV Monitors
RUI v3.x Upgrade

Technical Reference

Tektronix

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Contacting Tektronix

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- In North America, call 1-800-833-9200.
- Worldwide, visit www.tektronix.com to find contacts in your area.

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[W2 – 15AUG04]

Table of Contents

User Interface Overview

This document introduces you to the MTM400A and RFM300 DTV Monitor's user interface and explains the differences between the MTM400 RUI and the MTM400A and RFM300 RUI.

The DTV Monitors are functionally similar to the MTM400 MPEG Transport Stream Monitor. However, the MTM400 was based on Microsoft Java technology, for which Microsoft is withdrawing support. The DTV Monitors are based on Sun Java, and are more closely aligned with the MTS400 MPEG Test System.

The DTV monitor remote user interface (RUI) looks similar to the MTM400 RUI, but the DTV monitor RUI provides a rich, multi-layered user interface that allows structured access to all information.

Differences between the two RUIs include:

■ The MTM400 hot spot view, featuring device and stream buttons is no longer displayed. The device and stream features have been integrated into the single DTV monitor display.

■ In the MTM400, the button bar was the primary means of moving between information screens. In the DTV monitor, although the button bar is still present, screens are also directly accessible using tabbed pages.

■ The button bar can be displayed on its own to provide a high-level view of the error state of the monitored stream. The bar can also be customized by hiding and revealing buttons.

■ For detailed analysis and specific monitoring situations, the button bar can be hidden, leaving only the main application view visible.

■ Detail views in the main application can be displayed as separate windows using the tear-off function.

User Interface Components

The following figure shows the major components of the user interface implemented in the DTV monitor and version 3.x of the RUI.

The menu bar, toolbar, and status bar, while visually different, contain options and buttons similar in function to those in the MTM400.

The main viewing areas of the window is divided into two areas: the Button Bar and the Main Application View.
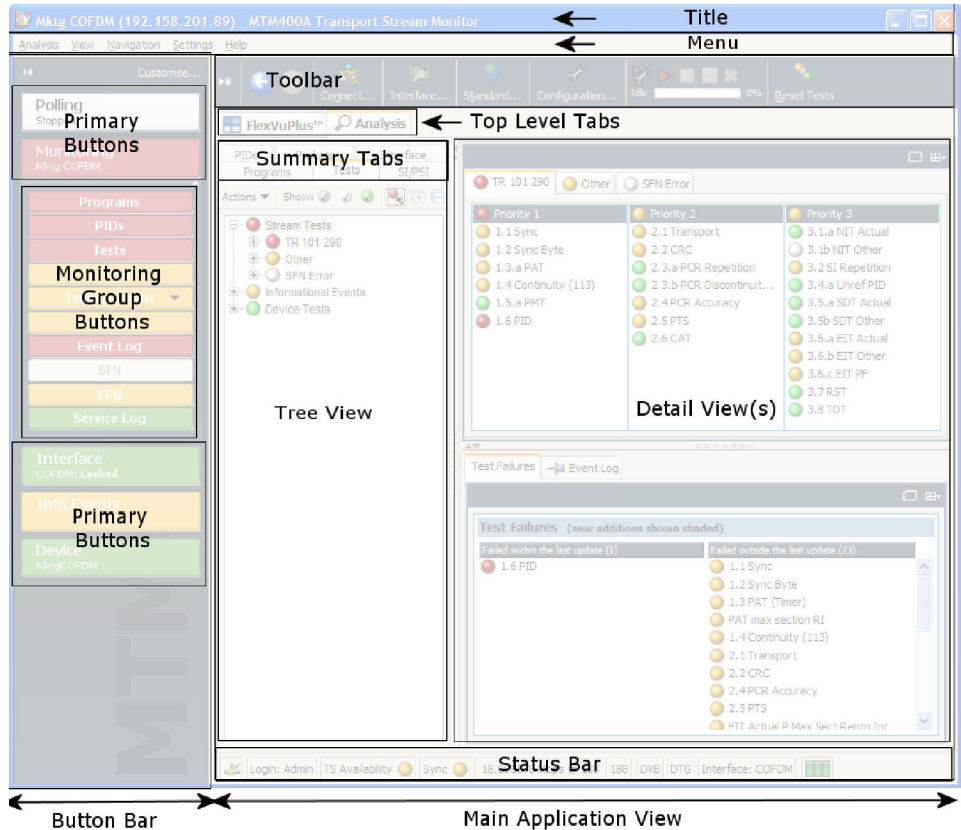

Figure 1: MTM400A user interface components

Button Bar   The MTM400 button bar showed monitoring status and displayed a corresponding view when clicked. The DTV monitor RUI copies this idea, but rearranges the buttons into a more intuitive order. The MTM400 Stream and Device hot spot buttons become Monitoring and Device buttons in the DTV monitor RUI.

The buttons from the MTM400 Stream window have been streamlined and grouped under the DTV monitor Monitoring button. The buttons from the MTM400 Device window have been removed and replaced by a node in the Analysis Tests view.

Main Application View   In the main application view, two top-level views are selected using tabs: *FlexVu*Plus and Analysis. You can customize the *FlexVu*Plus display to contain the analysis views of your choice.

The main analysis views are Programs, Tests, SI/PSI (tables), PIDs, Packets, and Interface (when an optional interface card is installed). The analysis views are selected using the summary tabs.

Each analysis view contains a tree view and a detail view. The content of the detail view is dependent on which node is selected in the tree view.

RUI Navigation   The MTM400 RUI navigation was simple, allowing the right view to change in accord with the button being clicked.

The DTV monitor RUI has comprehensive navigation possibilities that use the button bar, context menus, hyperlinks, and double-clicks.

*FlexVu*Plus Display

The *FlexVu*Plus display philosophy (first introduced in the Tektronix WVR600 Waveform Rasterizer), is now adapted for the DTV monitor. This gives users up to four concurrent views of a monitored signal and the flexibility to configure each of the windows independently. Each of the *FlexVu*Plus views is derived from views available under the Analysis tab. *FlexVu*Plus setups will be remembered between DTV monitor sessions.

With a virtually unlimited variety of stream monitoring displays from which users can choose, this exceptional flexibility enables the DTV monitor to perform like a "4-in-1 monitor" on a single incoming stream. The *FlexVu*Plus display enables users to easily configure their DTV monitor to provide a monitoring solution that is optimized for their specific requirement.
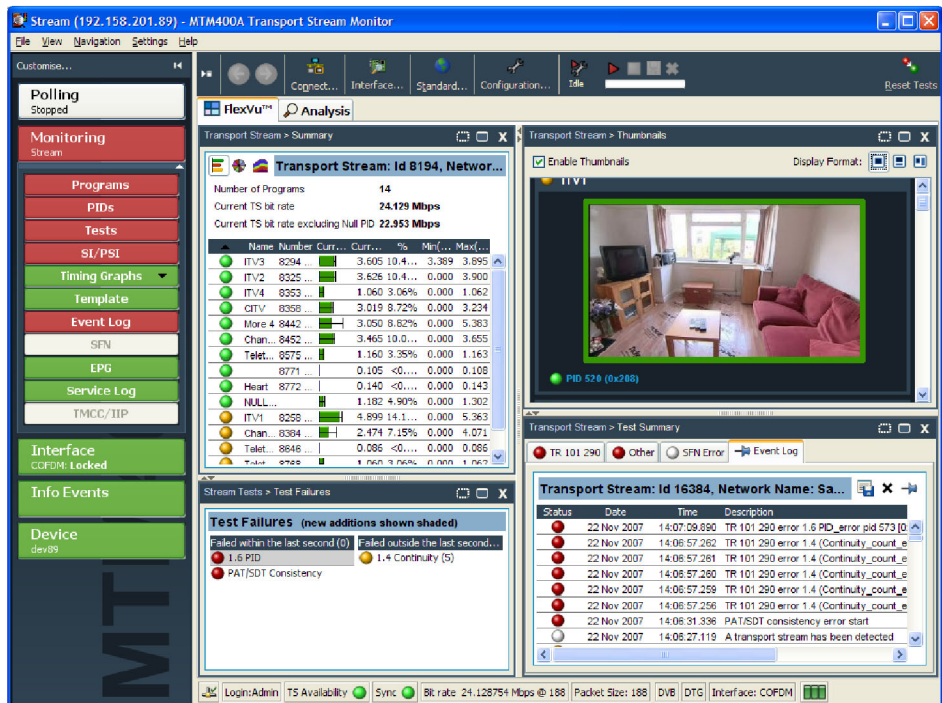

You can use the *FlexVu*Plus selection icon, which is present on all Analysis detail views, to extract views to the *FlexVu*Plus panels.
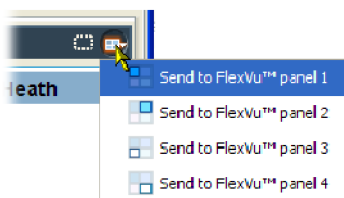
Analysis Views

The DTV monitor Analysis views each use a single tree view with different context-sensitive detail views contained within tabbed frames. From the main window, you can access the following views: Program, Tests, Tables, PID, Packets, and Interface.
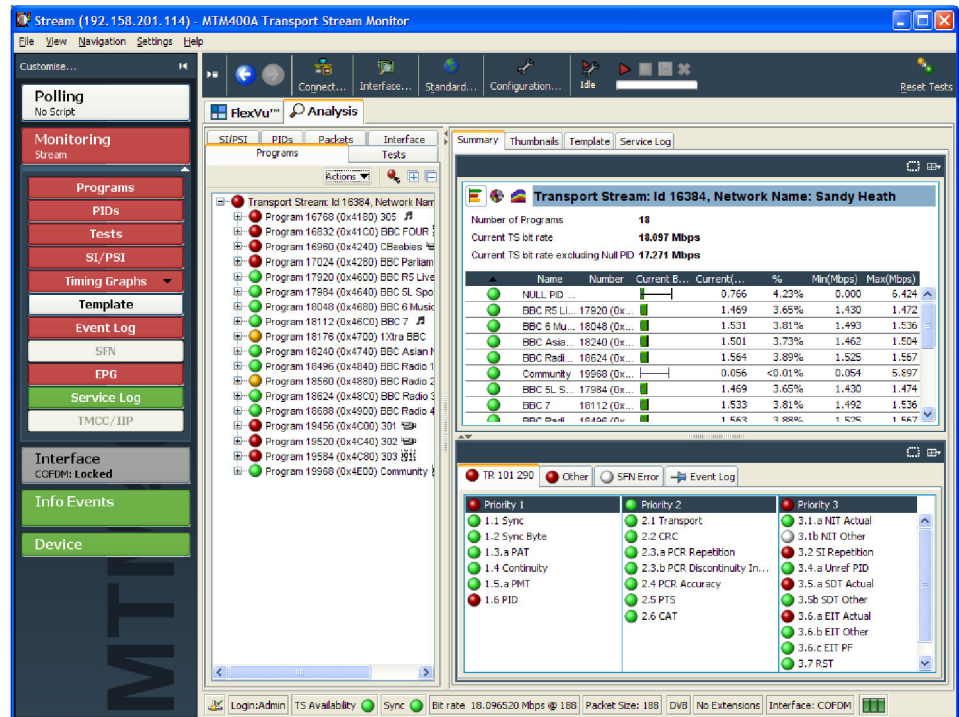
Programs View   The Program view provides a fast overview of the transport stream contents in terms of program content, bit rated use by each program, and TR 101 290 test results. Red, amber and green LEDs highlight errors associated with each program, or element of a program, within the transport stream. Red LEDs indicate that there are current errors in the stream, amber LEDs indicate that errors have occurred but are now clear, and green LEDs indicate that no errors have been detected.

Errors that are detected at lower levels in the program stream hierarchy propagate up to the highest level. This allows you to monitor all of the programs in the stream at a high level and then quickly go to lower levels as necessary to locate a problem.

The contents of the DTV monitor Programs view are broadly equivalent to the following MTM400 screens: Stream view: Summary, Detail (All Programs), Service and Event Logs, SFN, TMCC/IIP, Templates.

Tests View

With the Tests view you can identify the tests that are signaling errors in a monitored stream. The error log is automatically filtered by the selected test, and can also be filtered by Packet Identifier (PID). In addition to the standard first, second, and third priority tests included in TR 101 290 standard, tests are available for Program Clock Reference (PCR) jitter and program/PID bit rate. A variability test enables you to test the changes in the bit rate of a specific PID, and there are many tests that are specific to ISDB-T and ISDB-S streams. Informational events are also reported, including interface card warnings and polling events.

Also displayed in the Tests view are tests related to the DTV monitor instrument, for example, the system card temperature.

The contents of the DTV monitor Tests view are broadly equivalent to the following MTM400 screens: Device View: Status, Device Log; Stream view: Tests, Event Log.

SI/PSI (Tables) View

The SI/PSI (Tables) view displays the service information tables that have occurred in the analyzed stream that comply with the selected digital video standard. This includes MPEG-specific program information, DVB service information (SI), and ATSC (PSIP), ISDB program, and system protocol information. The tables are grouped together by function and hyperlinks enable you to quickly access related information within other tables. The SI/PSI tables repetition rate graphs and section data are available on additional tabs.

The contents of the DTV monitor SI/PSI view are broadly equivalent to the following MTM400 screens: Stream view: SI graphs and tables.

PIDs View

The PID view displays information about all of the PIDs found in the transport stream. When you select the transport stream, the associated summary view provides a PID-oriented overview of the transport stream, displaying the relative data rates of all of the PIDs contained within the stream. The information can be displayed as either a bar chart or as a pie chart. Pop up menus enable fast limit selection and links.

Each PID is associated with a number of tests. When one or more tests fail, each failed test will be listed under the relevant PID. Select a specific PID to display a summary of all the associated tests. Select a specific test to display the Event Log and Parameters for only that test.

The contents of the DTV monitor PIDs view are broadly equivalent to the following MTM400 screens: Stream view: PIDs, PID groups, PCR timing graphs.

Packets View   In DVB mode, the Packets view displays SFN (single frequency network) data if detected in the stream. In ISDB-T mode, this view displays ISDB-T information packets (IIPs) and TMCC information, if detected in the stream.

The contents of the DTV monitor Packets view are broadly equivalent to the following MTM400 screens: Stream view: SFN and TMCC.

Interface View   The Interface view provides a central location for information related to the IP and RF interface cards (where installed).

- Test results

- Graphical representation of specific IP and RF card measurements

- IP and RF card readings and control settings

The graphical views display a selection of graphs of instantaneous measurements and measurement trends. Trend graphs use accumulated readings to represent trends in selected readings for up to a week. Also available are an Event Log and a Parameter view.

The Interface tab is displayed only when an interface card is installed; only one interface card at a time can be installed.

The contents of the DTV monitor Interface view are broadly equivalent to the following MTM400 screens: Stream view: Configuration (interface) and Input Card.

Tear-off Views

The ability of the MTM400 to display multiple detail views at the same time is replicated in the DTV monitor using the tear-off function. Any detail view displaying the tear-off icon shown below can be displayed as a separate window. The tear-off window will continue to be updated independently of the main application. The displayed content can also be modified independently of the main display.
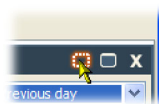

Figure 2: Tear-off icon

Configuration

All configuration elements, including stream, parameters, device, interface, and display, previously distributed throughout the MTM400 user interface, are now combined in a single dialog box that can be accessed from the menu bar or the toolbar.

User Documentation

The following table lists the current software version user documentation for the DTV monitor. For earlier versions, refer to *Documentation for Earlier Software Versions*. (See page 24.)

Table 1: DTV monitor product documentation

Document title	Tektronix part number	Description
Quick Start User Manual	071-2492-xx (English) 071-2493-xx (Japanese) 071-2632-xx (German)	Contains installation information and high-level operational overviews
Release Notes	077-0181-xx	Contains information about known operational issues
Technical Reference	077-0175-xx	Contains in-depth operational information
Specifications and Performance Verification Technical Reference	077-0176-xx	Contains the product specifications and a performance verification procedure
Test Parameter and Configuration File Technical Reference	077-0177-xx	Contains information about test parameters and configuration files
Programmer Manual	077-0178-xx	Contains syntax information about remote control commands
Declassification and Security Instructions	077-0179-xx	Contains information about how to remove user proprietary information from the instrument

Upgrades

The following table lists the ordering information that has changed for product upgrades.

Table 2: DTV Monitor (MTM400A) upgrade ordering information

MTM400 upgrades (old)	MTM400A upgrades (new)	Description
MTM4UP Opt. 01	MTM4UP 01	Triggered recording capability up to 160 MB
MTM4UP Opt. 02	MTM4UP 02	Transport stream service information analysis (PSI/SI/PSIP/ARIB view)
MTM4UP Opt. 03	MTM4UP 03	Template testing (for user-defined service plan testing)
MTM4UP Opt. 04	MTM4UP 04	In-depth PCR analysis with graphical result views
MTM4UP Opt. 05	MTM4UP 05	Bit rate testing functionality
MTM4UP Opt. 06	MTM4UP 06	Service logging
MTM4UP Opt. 07	MTM4UP 07	Polling
MTM4FCF	MTM4UP CF	COFDM interface
MTM4FGE	MTM4UP GE	Ethernet Interface With 10/100/1000Base-T; RJ-45 Electrical Port
MTM4FGE Opt. SX	MTM4UP SX	1000Base-SX Short Wavelength Optical port with LC connector (Multi-Mode 850 nm)
MTM4FGE Opt. LX	MTM4UP LX	1000Base-LX Long Wavelength Optical port with LC connector (Single Mode 1310 nm)
MTM4FGE Opt. ZX	MTM4UP ZX	1000Base-ZX Optical port with LC connector (Single Mode 1550 nm)
MTM4FQA	MTM4UP QA	QAM Annex A interface
MTM4FQB2	MTM4UP QB2	QAM Annex B Level 1 and Level 2 interface
MTM4FEP	MTM4UP EP	8PSK/QPSK interface
MTM4FQC	MTM4UP QC	QAM Annex C interface
MTM4FVS	MTM4UP VS	8VSB Interface
MTM4FEPIFC	MTM4UP IFC	One-time install of all selected options and calibration for one product
MTM4FGEIFC		
MTM4FQB2IFC		
MTM4FQCIFC		
MTM4FVSIFC		
MTM4FCFIFC		
MTM4FQPIFC		
MTM4FQAIFC		

There is no upgrade path from the MTM400 or MTM400A monitors to the RFM300 monitor.

RUI Control Equivalents

The following table describes the control equivalents between the DTV monitor RUI and the MTM400 RUI.

Table 3: RUI control equivalents

MTM400 RUI controls

Button bar	Button / Field	DTV monitor RUI equivalent controls
Summary	Pie Chart and Test Summary	Click the **Programs** button in the button bar
		Select the **Pie Chart** button on the right hand Summary tab
Detail	All PIDs	Click the **PIDs** button in the button bar
		Select the **Pie Chart** button on the right hand Summary tab
	SI Tables	Click the **PIDs** button in the button bar
		Select the **SI/PSI PIDs** node in the PIDs tree
		Select the **Pie Chart** button on the right hand Summary tab
	Program…	Click the **Programs** button in the button bar
		Select the desired Program
		Select the **Pie Chart** button on the right hand Summary tab
Tests	Status	Click the **Tests** button in the button bar
		Status is shown in the Tests tree and right hand panes
	Set Alarms	Click the **Tests** button in the button bar
		Right click desired test to show menu
		Select required Trigger Action from menu
	Parameters…	Click the **Tests** button in the button bar
		Right click desired test to show menu
		Select **Edit Parameters** … from menu
		NOTE. *Not all tests have editable parameters*
Custom	Tests List	This feature is not implemented in the MTM400A RUI
Info	Status	Click the Info Events button in the button bar
		Status is shown in the tree and right hand panes
	Set Alarms	Click the **Tests** button in the button bar
		Right click desired event to show menu
		Select required Trigger Action from menu

Table 3: RUI control equivalents (cont.)

MTM400 RUI controls

Button bar	Button / Field	DTV monitor RUI equivalent controls
Programs	Histogram view	Click the **Programs** button in the button bar
		Select the **Histogram Chart** button on the right hand Summary tab
	Set Program Bit rate limits	Click the **Programs** button in the button bar
		Right click the required program to show menu
		Select **Set Bit Rates Limits** … from menu
	Clear Limits	Click the Programs button in the button bar
		Right click the required program to show menu
		Select **Clear Bit Rates Limits** from menu
	Reset Change Bars	Click the **Programs** button in the button bar
		Right click the required program to show menu
		Select **Reset Range Bars** from menu
PIDs	Histogram View	Click the **PIDs** button in the button bar
		Select the **Histogram** button on the right hand Summary tab
	Filter on test	Click the **Tests** button in the button bar
		Select the desired test in the tree
		Associated PIDs view on the right shows PIDs for the test
	Set PID bit rate limits	Click the **PIDs** button in the button bar
		Right click the required PID to show menu
		Select **Set Bit Rates Limits** … from menu
	Clear PID bit rate limits	Click the **PIDs** button in the button bar
		Right click the required PID to show menu
		Select **Clear Bit Rates Limits** from menu
	Set per PID Parameters	Click the **PIDs** button in the button bar
		Select the required PID
		In right hand **Associated Tests** view, right click test and select **Edit Parameters** … from menu
	Reset Change Bars	Click the **PIDs** button in the button bar
		Right click the required PID to show menu
		Select **Reset Range Bars (all PIDs)** from menu
	Manage User PIDs…	Click the **PIDs** button in the button bar
		Right click the **User PIDs** node in the PIDs tree to show menu
		Select **Add User PID**
	Program PID grouping	Click the **Programs** button in the button bar
		Select the Program node
		PIDs are grouped in tree and in Histogram view

Table 3: RUI control equivalents (cont.)

MTM400 RUI controls

Button bar	Button / Field	DTV monitor RUI equivalent controls
PID Groups	PID Group Management	Click the **PIDs** button in the button bar
		Select the **PID Groups** node
		Group Management is via the right hand view and the context menus for the PID Group nodes in the tree
PCR Jitter	PID x Timing graphs	Click the **Timing Graphs** button in the button bar
		Select the required PID from the menu
		Timing Graphs tab shown on the right hand side
SFN	SFN View	Click the **SFN** button in the button bar
		Right hand side shows SFN data
		NOTE. This is only available when there is SFN data in the stream
TMCC	TMCC Summary View	Click the **TMCC/IIP** button in the button bar
		Select the **Transport Stream** node in the tree
		Select the **TMCC/IIP** tab on right hand side
		NOTE. This is only available when there is TMCC data in the stream
SI Graphs	SI Graphs for Table x	Click the **SI/PSI** button in the button bar
		Select the desired table in the tree
		Select the **SI Repetition Graphs** tab on the right hand side
SI Tables	SI Tree view	Click the **SI/PSI** button in the button bar
		The SI/PSI tree structure is shown in the tree
Template		Click the **Template** button in the button bar
		Right hand side shows Template data
		NOTE. This is only available when Template Checking is enabled
Recording		Click the **Recording Settings** button on the toolbar (to the right of the **Configuration** … button)
		The configuration dialog is opened at the recording page
Recording	Status	Status is shown on the toolbar and on the Recording page
Log	Event Log	Click the **Event Log** button in the button bar
		Right hand side shows Event Log at bottom
		Note: Filtered event logs are present when clicking on each test in the Tests tree
	Change displayed timezone of log entries	Click the **Configuration...** button on the toolbar
		Select the **Preferences** page
		Edit the **Timezone for timestamp display** field
	Download and Clear Log	Click the **Event Log** button in the button bar
		Right hand side shows Event Log at bottom
		Download and Clear buttons are above log entries

Table 3: RUI control equivalents (cont.)

MTM400 RUI controls

Button bar	Button / Field	DTV monitor RUI equivalent controls
Config	Standard and Region	Click the **Standard** … button on the toolbar
		Select the standard and/or region
	Interface (select/configure)	Click the **Interface** … button on the toolbar
		Use the dialog to select channels and edit parameters
	Interface (lock)	Displayed as text on **Interface** button
	Stream Name	Click the **Configuration...** button on the toolbar
		Select the **Stream** page
	Template Checking	Click the **Configuration...** button on the toolbar
		Select the **Stream** page
	Maintenance Mode	Click the **Configuration...** button on the toolbar
		Select the **Stream** page
	Configuration Slot management	Click the **Configuration...** button on the toolbar
		Select the **Slot Management** page
	Scheduling management	Click the **Configuration...** button on the toolbar
		Select the **Schedule Management** page
	Enable Thumbnails	Click the **Configuration...** button on the toolbar
		Select the **Stream** page
	SI Parameter Processing (ISDB only)	Click the **Configuration...** button on the toolbar
		Select the **Stream** page
Service Log	Status and Management	Click the **Service Log** button in the button bar
		The service log view is shown on the right hand side
Polling	Polling Channel List	Click the **Polling** button in the button bar
		The **Polling** window is displayed containing the selected channels
	Channel configuration	Click the **Polling** button in the button bar
		The **Polling** window is displayed containing the selected channels
		Select the **Configure** button
		Press OK to use the currently defined presets in the interface dialog as the polling channels
Thumbnails		Click the **Programs** button in the button bar
		Select the **Thumbnails** tab on the right hand side
		NOTE. Thumbnails can also be viewed for individual programs and for all PIDs

Table 3: RUI control equivalents (cont.)

MTM400 RUI controls

Button bar	Button / Field	DTV monitor RUI equivalent controls
Input Card	Graphs	Click the **Interface** button in the button bar
		Select the **Graphs** tab
		Select the **Add Graph** button and select desired graph
	Controls	Click the **Interface** … button on the toolbar
		In the dialog, edit the parameters for the desired preset, press Apply to see the effects without closing the dialog.
	Readings	Click the **Interface** button in the button bar
		Select the **Graphs** tab
		Readings is displayed on the right hand side of the tab
		NOTE. This readings table can be shown in a floating or torn-off window

Reverting the RUI

⚠ **CAUTION.** *The RFM300 DTV monitor must not be downgraded below version 3.2.*

You can use the following procedure to replace the MTM400A RUI on your instrument with MTM400 RUI version 2.6.1. You would do this if you have an MTM400A monitor, or an MTM400 monitor that has been upgraded to RUI version 3.x, and you want to use the previous version of the RUI.

⚠ **CAUTION.** *You must revert the RUI to version 3.0 before reverting to version 2.6.1. If you attempt to revert the RUI version directly from version 3.1 or above to version 2.6.1, the process may fail.*

As an alternative to using the RUI, you can use the command line firmware upgrade program supplied on the DTV Monitor Application Firmware CD-ROM. (See page 22, *Command Line Firmware Downgrade*.)

⚠ **CAUTION.** *If you have the GE option (GbE interface) installed in the MTM400A DTV monitor, you must use the Command Line Firmware Upgrade process. (See page 22.) For other interface options, you can use either upgrade process.*

Requirements

To perform this procedure, you need the the following files:

RUI version 2.6.1 firmware file - MTM400 v2.6.1 build 03.hex

RUI version 3.0.060 firmware file - MTM400 v3.0.060 build 702.hex

These files are available on the Tektronix Web site (www.tektronix.com/software). They are also provided on the application firmware CD that was shipped with your monitor:

- MTM400 (Tektronix part number 063-3719-07)

- MTM400A (Tektronix part number 063-4136-xx)

NOTE. *In this section the content of dialog boxes may change depending on the RUI version. However, the dialog box titles and the procedures described are accurate.*

RUI Version 3.x to Version 3.0 Procedure

The process for reverting the firmware version of the instrument is initiated from the initial **Connect to MTM Device** dialog box.

⚠️ *CAUTION. To prevent software problems, do not open the Connect to MTM Device dialog box from the Connect button in the MTM400A RUI toolbar.*

1. On a networked PC, launch Microsoft Internet Explorer.

2. In the Web browser address bar, enter the IP address or network name of the MTM400 or MTM400A monitor. (See Figure 3.) For example:

   `http://TSMonitor01 or http://192.158.201.105`

   After you press the Enter key, a Java applet is downloaded from the the MTM400A monitor and launched.

3. In the Connect to MTM Device dialog box, select the **Administrator** Login Type from the drop-down list, and then enter the password.

4. Click **Upload Firmware** to open the Upload Device Firmware dialog box.
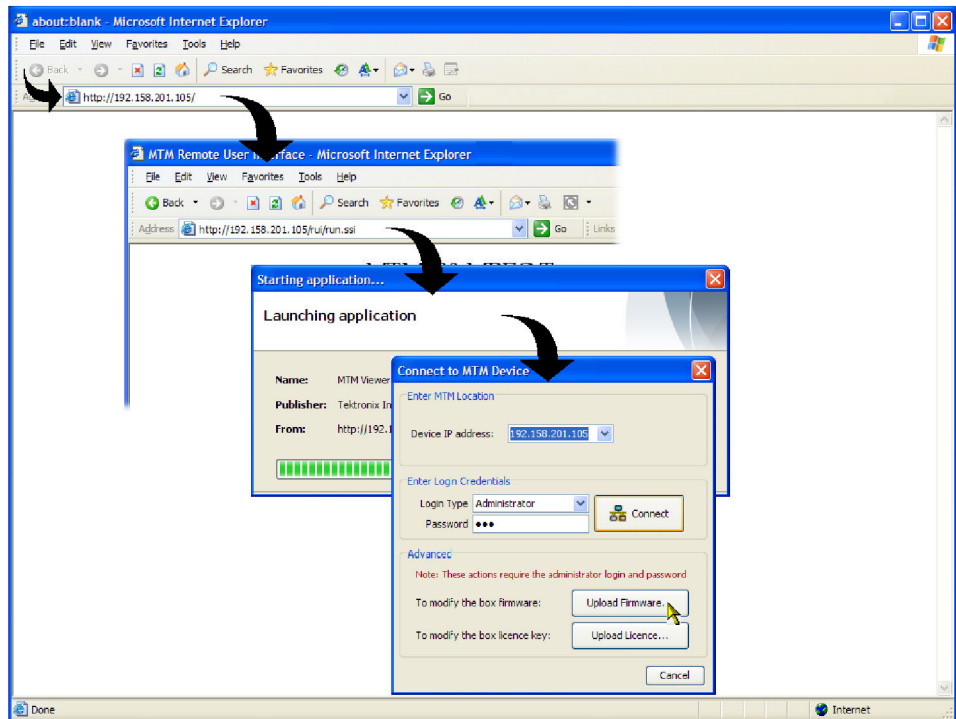
Figure 3: Connecting to the instrument

5. In the Upload Device Firmware dialog box, enter the path and name of the firmware file or use the Browse button to locate and select the firmware file **MTM400 v3.0.060 build 702.hex**. (See Figure 4.)
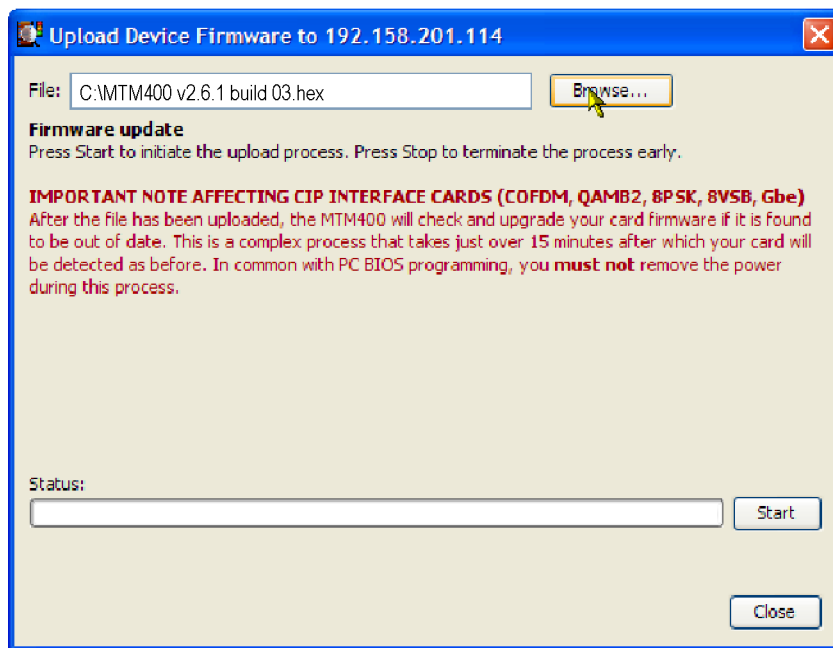
Figure 4: Upload Device Firmware dialog box - typical

6. In the Upload Device Firmware dialog box, click **Start** to initiate the firmware installation.

7. When the firmware upload is complete, a **Firmware upload complete** message is displayed. (See Figure 5.)

   As stated in the message, the uploaded firmware will be checked, and if valid, reprogramming of the instrument will start. The reprogramming process can take up to fifteen minutes.

⚠ **CAUTION.** *To prevent software problems, do not remove power from the instrument during reprogramming.*
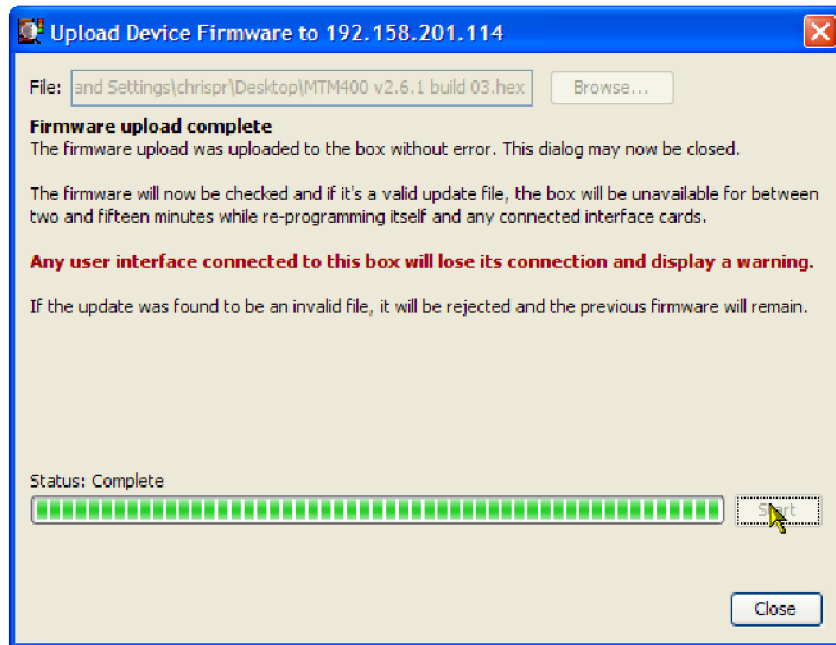
Figure 5: Firmware upload complete message - typical

8. When reprogramming is complete, close the RUI, and if necessary, close the associated Web browser window.

GbE Interface Confirmation

If you are reverting the firmware to version 3.0 and you have a GbE card installed (Option GE), it will not be listed in the Configure Interface dialog box until the device (MTM400A) has been reset.

1. Allow sufficient time for the reprogramming to complete; this can be up to 30 minutes.

2. Open the RUI as described previously.

3. Select **Configuration** from the toolbar.

4. Select **Device > Reset Device** in the **Configuration** dialog box.

When complete, the GbE interface card option will be listed in the **Configure Interface** dialog box drop-down menu.

RUI Version 3.0 to Version 2.6.1 Procedure

1. Repeat steps 1 to 8 of the *RUI Version 3.x to Version 3.0 Procedure* using instead the RUI version 2.6.1 firmware file **MTM400 v2.6.1 build 03.hex**.

2. Launch Microsoft Internet Explorer.

NOTE. Before the MTM400 RUI can be opened, you must disable the Java Runtime Environment in the Internet Explorer. If you attempt to open the MTM400 RUI before disabling the Java Runtime Environment, the following message will be displayed.

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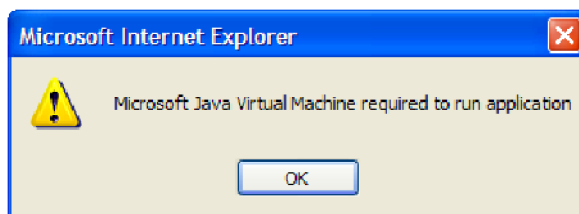
3. From the Internet Explorer menu bar, select **Tools** > **Internet Options...**, and then select the **Advanced** tab.

4. Locate the **Java (Sun)** node, and then clear the **Use JRE** check box. (See Figure 6.)
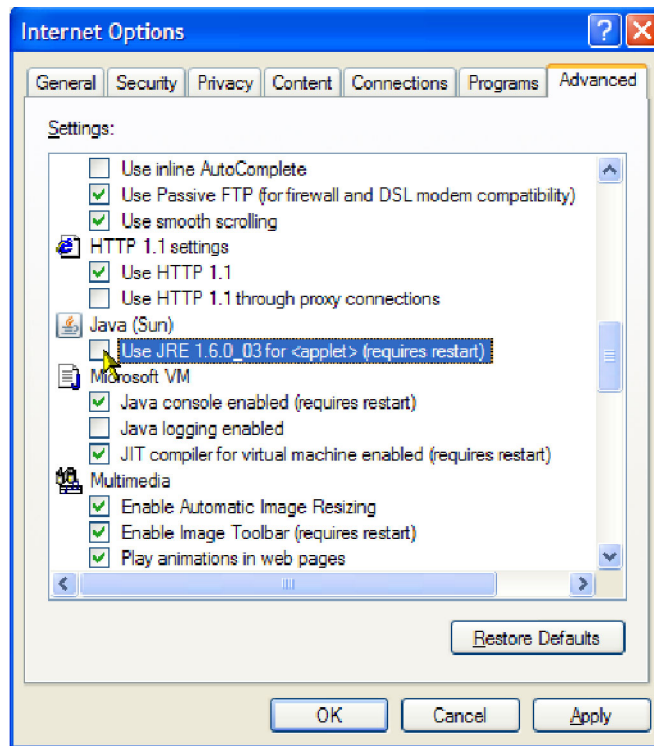
Figure 6: Internet Options dialog box

5. Close the Internet Options dialog box.

6. Close and restart Internet Explorer.

7. In the Web browser address bar, enter the IP address or network name of the MTM400 or MTM400A monitor.

NOTE. After you have disabled the Java Runtime Environment, if you still receive the message (Microsoft Java Virtual Machine required to run application), you may need to reinstall the Microsoft Virtual Machine. This is available on the Internet or from the support folder on the MTM400A monitor application firmware CD, Tektronix part number 063-4136-00.

8. In the Logon Details dialog box, select the user type from the drop-down list, and enter the password. (See Figure 7.)
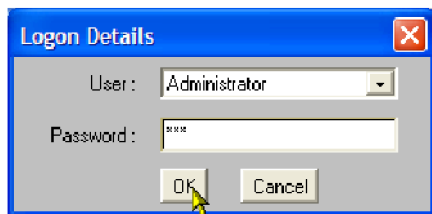
Figure 7: Login Details dialog box

9. The MTM400 RUI hot spot and Stream Summary windows should now be displayed. (See Figure 8.)

NOTE. If the instrument on which you reverted the firmware version was an MTM400A monitor, and especially if the login password was changed from the factory default value, the RUI v2.6.1 may be inaccessible. In this situation, you must clear the NVRAM and reassign the IP address of the instrument. The procedure to perform that task is located in the Installation section of the MTM400A Quick Start User Manual, Tektronix part number 071-2492-xx.
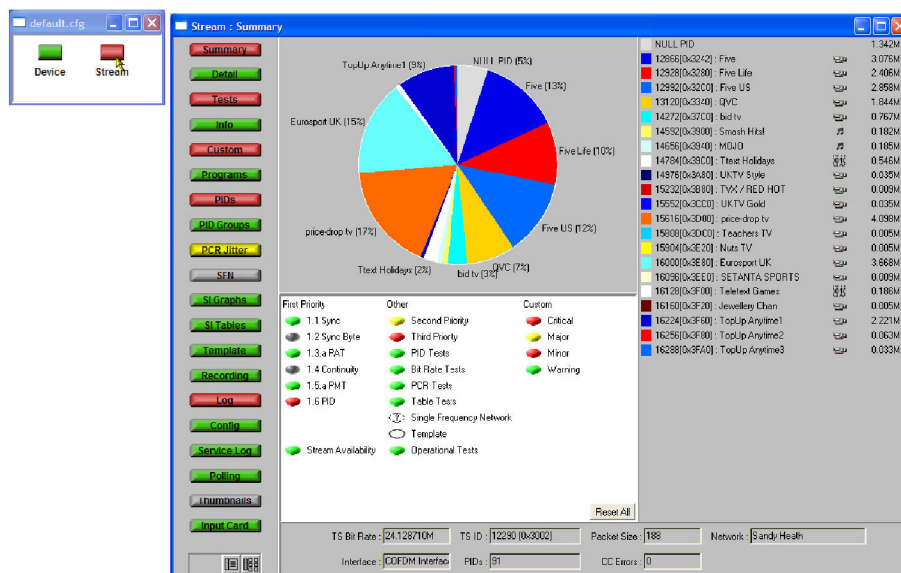
Figure 8: RUI version 2.6.1 display

Command Line Firmware Downgrade

As an alternative to using the MTM400A RUI, you can use the command line firmware upgrade program supplied on the MTM400A Application Firmware CD-ROM to downgrade the firmware.

Use the following steps to downgrade the firmware from the command line:

1. Ensure that the MTM400A instrument is powered on.

2. Ensure that the PC is connected to the same network as the MTM400A instrument.

3. Ensure that the firmware upgrade file(s) is available. (See page 15, *Requirements*.) Copy these files to a temporary directory on the PC's hard drive.

4. At the PC, insert the MTM400A Application Firmware CD-ROM into the CD-ROM drive. You are advised to locate the upgrade program, mtmfwuploader.exe, and copy it to the temporary directory containing the firmware upgrade file(s).

5. From the Windows desktop, open the Command window, **Start > Run > cmd**.

6. In the command window, change to the temporary directory containing the upgrade program and the upgrade files.

7. Enter the program command in the following format:

   ```
   mtmfwuploader <mtm address> <firmware file>
   ```

   for example:

   ```
   mtmfwuploader 123.345.567.789 "mtm400 v3.0.060 build
   702.hex"
   ```

NOTE. When the firmware upload file name has spaces in it, enclose the name in quotation marks, as shown in this example.

---

8. Execute the command by pressing the Enter key on your keyboard.

The firmware upload program will run. When complete, the following message will be displayed: **MTM400 and interface card is programmed now**.

The firmware upload is complete.

NOTE. When downgrading from RUI Version 3.x to Version 3.0, you must refer to GbE Interface Confirmation before attempting to select the GbE interface card (Option GE). (See page 18, GbE Interface Confirmation.)

NOTE. When downgrading from RUI Version 3.0 to Version 2.6.1, you must disable the Java Runtime Environment in the Internet Explorer. To do this, see the RUI Version 3.0 to Version 2.6.1 Procedure, steps 2 through 6. (See page 19.)

Troubleshooting

The progress indicator following the "Waiting for interface programming to complete" message, may go beyond 100%. If this happens, do the following steps:

1. Ensure that the signal input is disconnected and retry the process.

2. Observe the SFP LINK LED on the GbE interface card rear panel.

⚠ *CAUTION. If, with no input, the SFP LINK LED stays on, rebooting the instrument could result in firmware corruption.*

---

3. If the LED is still on after 15 minutes, then a reboot, by removing and reinstating power, can be tried.

4. If the upgrade is still unsuccessful, contact Tektronix support (www.tek.com).

Documentation for Earlier Software Versions

The following tables list the product documentation available for earlier software versions.

Refer to *User Documentation* for current software version documentation. (See page 8.)

RUI v2.6.1 Product Documentation

You can download the latest versions of the user documentation for the RUI v2.6.1 from the Tektronix Web site (www.tektronix.com).

Table 4: RUI v2.6.1 product documentation

Document	Tektronix part number
User manual	071-1224-xx (English)
	071-1538-xx (Japanese)
Technical reference	071-1560-xx
Release notes	071-1564-xx

RUI v3.0 Product Documentation

You can download the latest versions of the user documentation for the RUI v3.0 from the Tektronix Web site (www.tektronix.com).

Table 5: RUI v3.0 product documentation

Document	Tektronix part number
Quick Start User manual	071-2492-xx (English)
	071-2493-xx (Japanese)
Technical reference	071-2495-xx
Release notes	071-2494-xx