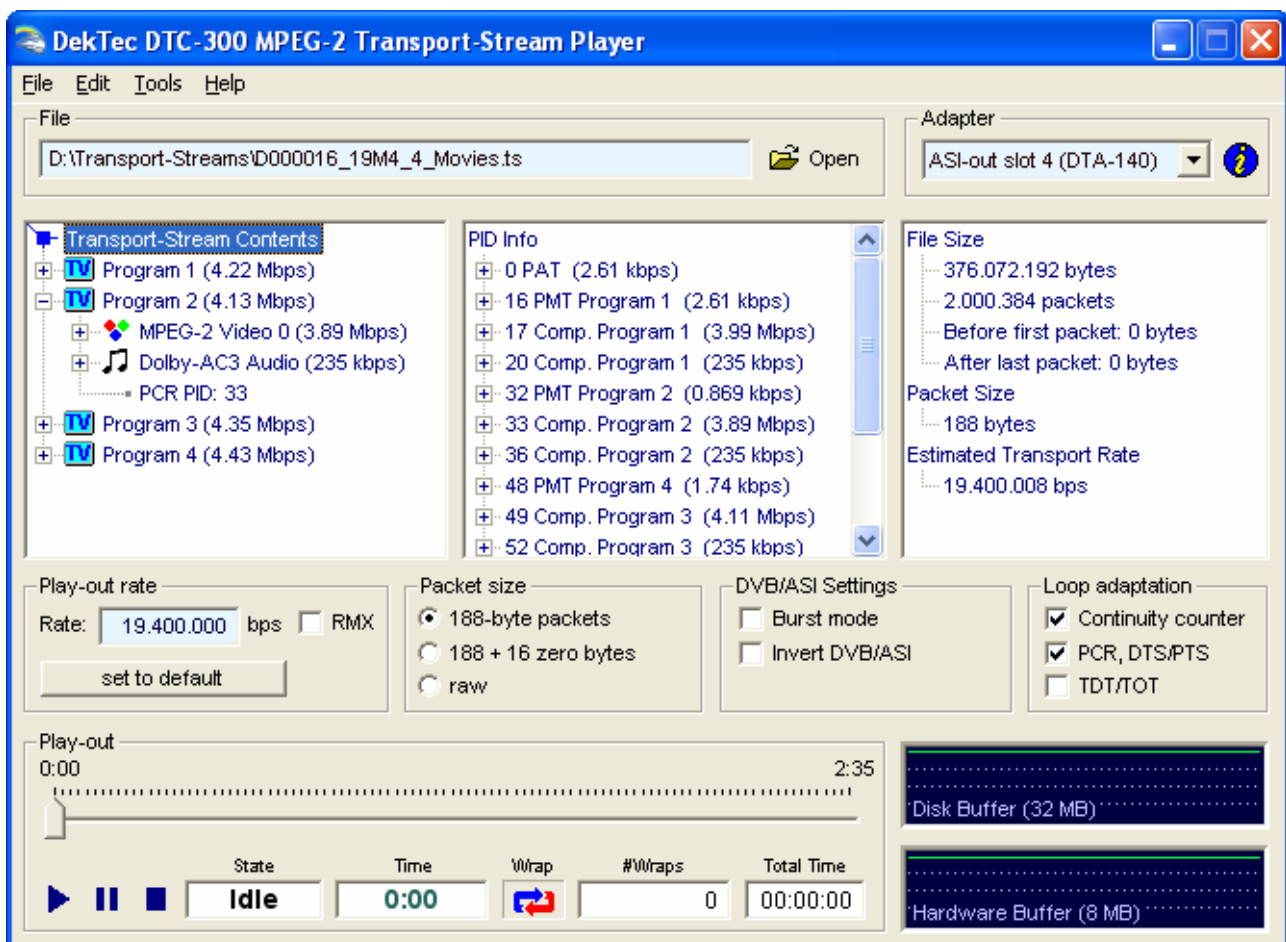


# StreamXpress

## MPEG-2 Transport-Stream Player



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## 1. Introduction

The DTC-300 StreamXpress is an easy-to-use software package designed to provide real-time playback of MPEG-2 compliant transport streams. The StreamXpress is intended to be loaded by the end-user on any qualifying PC or laptop and work in conjunction with DekTec output devices. The StreamXpress provides basic transport stream information including: transport stream contents, PID, and file information. The StreamXpress also provides start, stop, pause, and seamless loop capabilities. These features, when coupled with the variety of available DekTec output devices, team up to give you a powerful and portable transport stream playback solution that will not break your budget.

## 2. Specifications and Minimum Requirements

### 2.1. Output bit-rate

214 Mb/s maximum, limited by the capabilities of the output device:

DVB/ASI with DTA-140 and DTU-205 = 214 Mb/s, DTA-100 = 150 Mb/s.

DVB/SPI with DTA-102 = 108 Mb/s.

QPSK L-band with DTA-107 = 72 Mb/s.

Output-rate resolution: 1 bit/s

### 2.2. Compatible Output Devices

Any DekTec Output device

DVB/ASI with DTA-100/107/140, DTU-205

DVB/SPI with DTA-102

### 2.3. Minimum PC / Laptop Requirements

- Operating System: Windows 2000 (≥SP4) / XP (≥SP1a) / 2003  
Processor: PIII 300MHz minimum
- RAM: 256MB
- Disk Drive: Rates > 40Mb/s use drive separate from Operating System  
Rates ≤ 100Mb/s use single 7200 RPM SATA or SCSI  
Rates > 100Mb/s use single 15000 RPM SCSI, Striped 7200 RPM  
SATA, or Striped SCSI<sup>1</sup>

**Note 1:** Parallel ATA Drives may be used, but usually do not achieve same performance as SATA or SCSI.

**Note 2:** Drive specifications are recommendations. Different architectures will yield different results in some systems.

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<sup>1</sup> Best performance is achieved using Striped SATA or SCSI Drives

### **3. StreamXpress Software Installation**

#### **3.1. DekTec PCI Cards**

1. With power off, install Dektec PCI card (DTA-100/102/107/140) into your PC and power-on the unit.
2. Download current version of the DTC-300 StreamXpress software from the DekTec website to a folder on your PC (<http://www.dektec.com/downloads/applications.asp>).
3. The installation application will be contained in a .zip file. Double-click on the "StreamXpress SetUp.exe" application to begin the installation.
4. The installation is self-explanatory. The main thing to keep in mind is that you will be prompted to install a driver. Select the DTA-1xx driver, the DTU-2xx driver should not be selected unless installing the DTU-205 FantAsi (see Figure 1).

You will now be able to use your StreamXpress software with installed DTA-1xx PCI cards.

#### **3.2. DekTec DTU-205 FantAsi**

1. Download current version of the DTC-300 StreamXpress software from the DekTec website to a folder on your PC (<http://www.dektec.com/downloads/applications.asp>).
2. The installation application will be contained in a .zip file. Double-click on the "StreamXpress SetUp.exe" application to begin the installation.
3. The installation is self-explanatory. The main thing to keep in mind is that you will be prompted to install a driver. Select the DTU-2xx driver, the DTA-1xx driver should not be selected unless installing DTA-1xx PCI cards (see Figure 1).
4. Insert the DTU-205 USB connection into your PC or Laptop. You will be prompted to install new hardware. Allow the hardware installer to automatically find the driver and install the device. It may require you to do this two times. You may also need to repeat this process any time that the DTU-205 has been removed from and reinstalled on your system.

You will now be able to use your StreamXpress software with installed DTU-2xx ASI/USB devices.

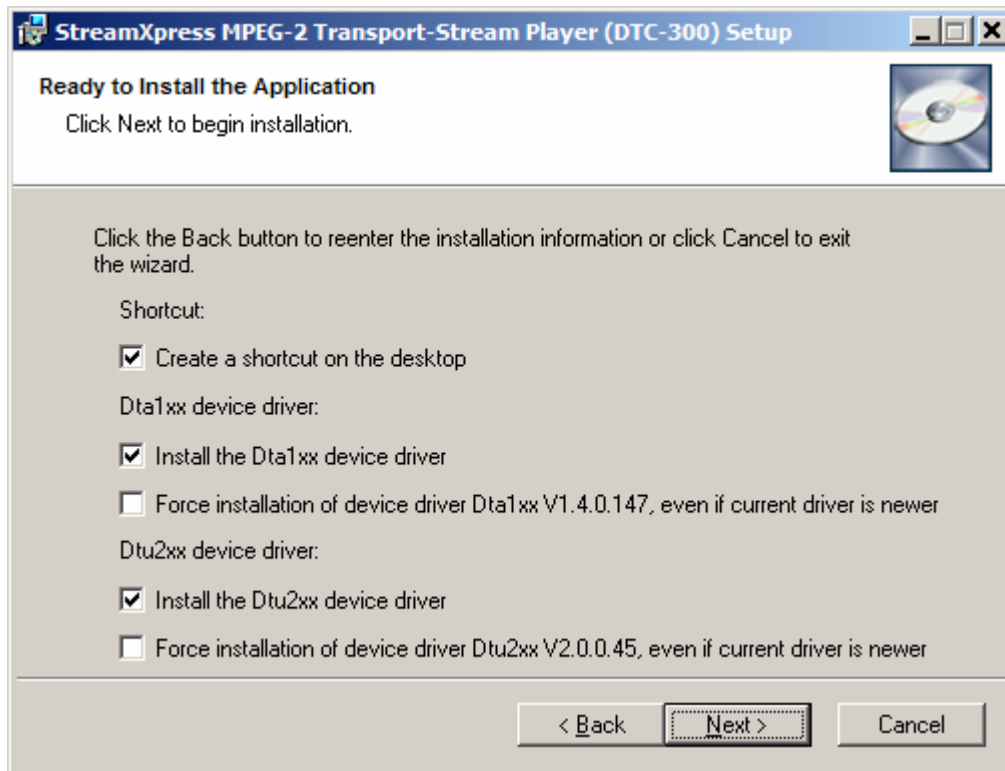


Figure 1 DTC-300 Driver Install

### 3.3. Licensing

To be able to run the StreamXpress software a valid license is required<sup>2</sup>. Upon start-up the StreamXpress will check if it can find a valid license on one of the DekTec DTA-1xx or DTU-2xx device<sup>3</sup> in the system. If no license is found the StreamXpress will disable all its features and will display a no license message. If a valid license is encountered the StreamXpress will be ready for usage.

If you have bought a DekTec device together with a StreamXpress license (e.g. DTA-100SP or DTU-205SP) the license will have been pre-loaded on the device by DekTec and you should be able to start using the StreamXpress immediately.

If you have bought a device without StreamXpress license and you would like to start using the StreamXpress software please contact DekTec (<mailto:sales@dektec.com>) or your local distributor to request a license for the StreamXpress software. To be able generate a license for your device please include the serial number (use the DtInfo tool to determine the serial number or refer to the sticker on the back of the device) of the device(s) you want to license in your request.

The license will be send to you in the form of a small application which you will need to run once, so that this application can program the license on your device. After successfully running this small application you should be able to use the StreamXpress with your DekTec device.

<sup>2</sup> The StreamXpress requires that every DekTec device that is used with the StreamXpress has a valid license.

<sup>3</sup> DekTec licenses are located on the DekTec device (i.e. the device itself acts as a kind of dongle).

To check if your device is licensed for the StreamXpress the DtInfo tool can be used (<http://www.dektec.com/Downloads/Utilities.asp>). DtInfo is a free tool which scans your system for all available DekTec devices and displays: their serial number, firmware version, available license and the current version of the driver used.

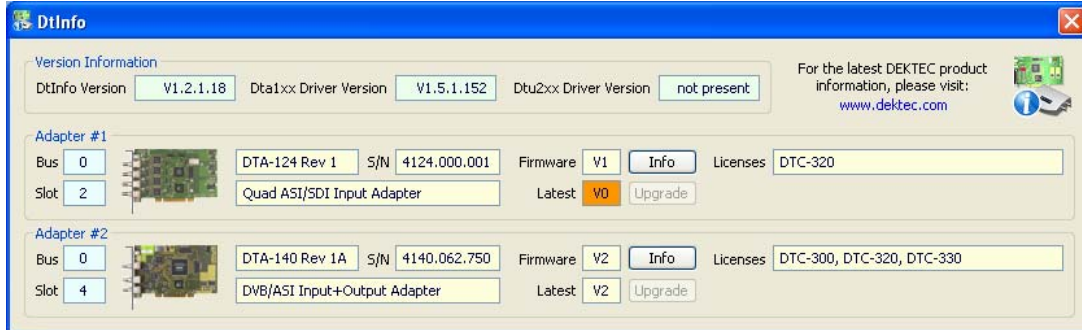


Figure 2 DtInfo sample screenshot

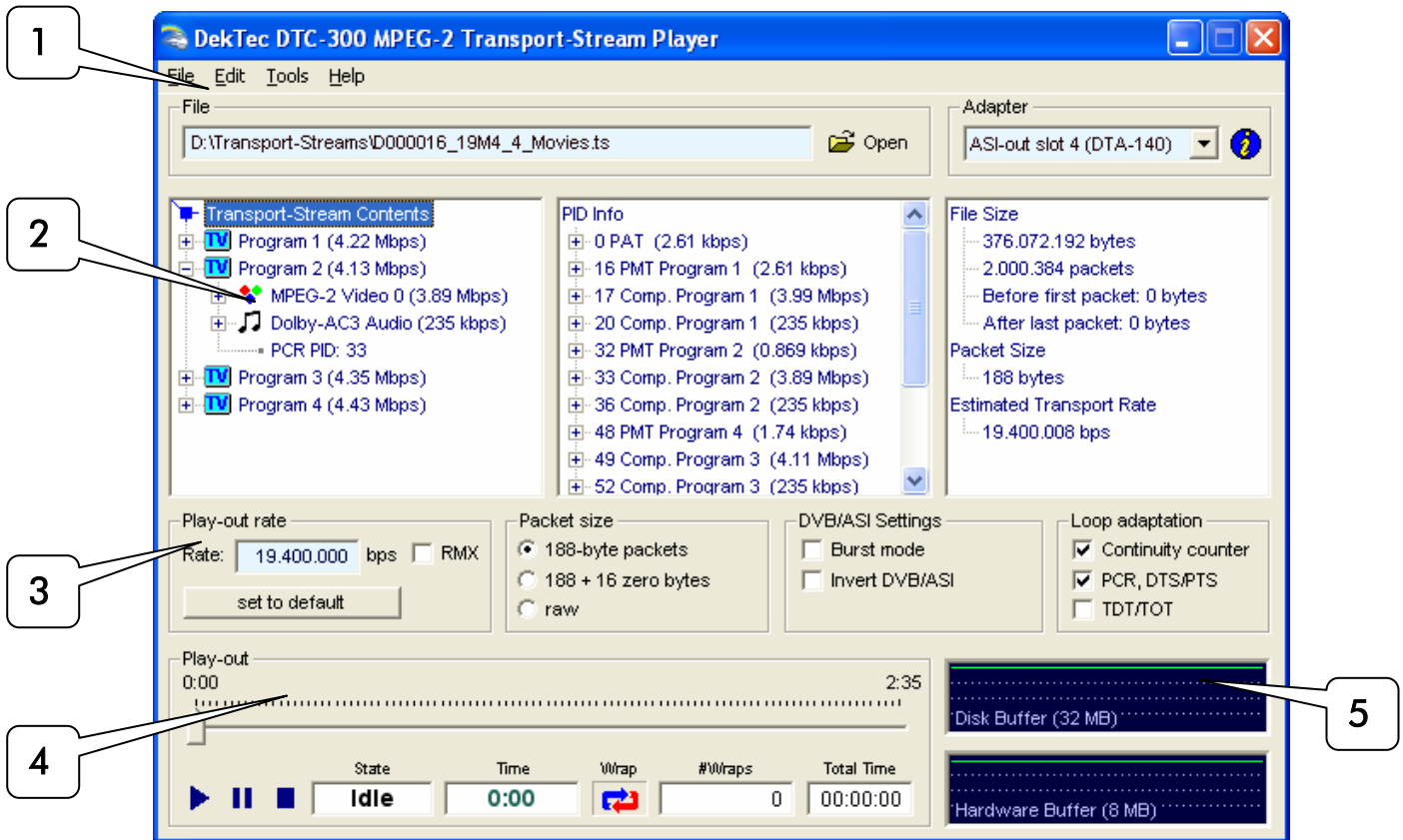
## 4. StreamXpress Overview

### 4.1. Launching the StreamXpress

Double-click on the desktop icon created by the software installation. This will launch the StreamXpress software.



### 4.2. StreamXpress Application General Layout



**1. File Selection and Setup Tool Bar:** The top area of the StreamXpress application contains settings that allow you to select the file for play-out, select the output adapter, modify timing, and perform error injection.

**2. Stream Analysis Window Panes:** This area displays basic parameters of the selected transport stream. You may view the stream based on transport stream contents, PID, and file specifications.

**3. Play-out Parameters:** This area of the application allows you to modify play-out bit-rate, enable/disable re-multiplexing mode, packet size, ASI settings, and wrap-around settings.

**4. Play-out Control:** This area provides control of the play-out process. It also contains information regarding the current play-out operation.



**5. Buffer Information Window:** The two buffer windows provide information regarding the disk and hardware buffers used in the play-out system.

## 5. File Selection and Setup Tool Bar:

The first step in playing a transport stream file is selecting the output adapter. You will then need to select a file for play-out. Once you have selected a file, you will be able to apply several parameters to the output.

### 5.1. Output Adapter Selection

If you have only one adapter installed, the StreamXpress will automatically default to this adapter. If more than one DTA PCI card or DTU USB device is installed, you must select which one you wish to control with the application. Use the pull-down to select the appropriate adapter. The information button displays basic parameters of the selected adapter.

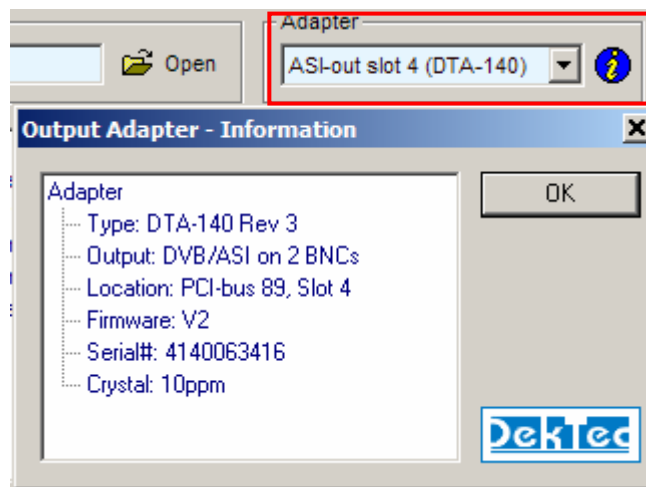


Figure 3 Adapter Selection and Information

Your StreamXpress application should now be properly setup. The remainder of this manual provides information on viewing the different aspects of the incoming transport stream.

### 5.2. File Selection:

Selecting a transport stream file may be accomplished in two locations on the StreamXpress application. Both places will prompt you to browse for the file on your PC.

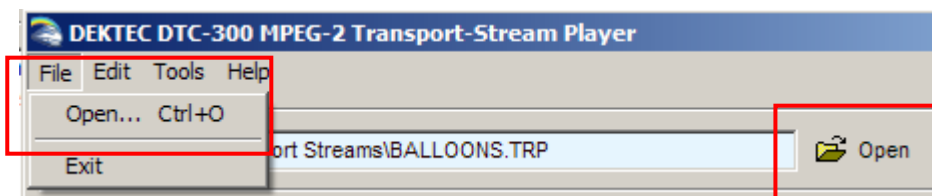


Figure 4 File Selection

StreamXpress will, by default, look for files of \*.trp and \*.ts extensions. However, you may play a file with any extension by selecting "All Files" in the file of type pull-down. Keep in mind that although the file does not need to have a \*.trp or \*.ts extension, it must be a valid transport stream.

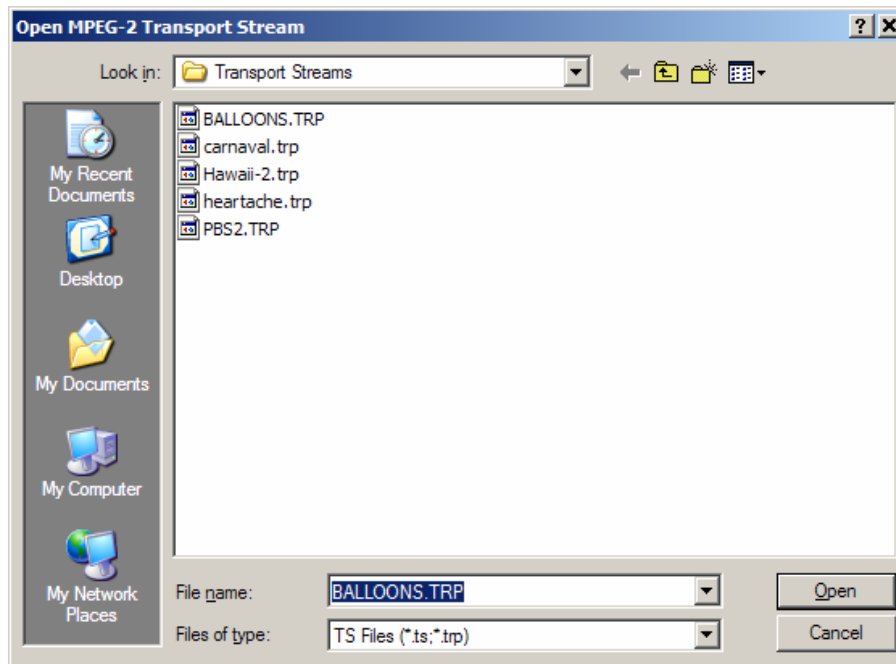


Figure 5 Browsing for a File

### 5.3. Creating a Sub Loop

You may play a file in two different ways. The StreamXpress will play the entire file by default. However, you may select Sub Loop and play only a portion of the file. Click on Edit > Sub Loop to enter the sub-loop setup window.

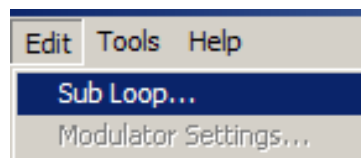


Figure 6 Selecting Sub-Loop

The first step is to select whether to use sub looping. With sub loop selected, you will need to define the start, end, or length. These fields are co-dependant on each other. The EOF box displays the total duration of the raw file. A message indicating "Sub Loop Selected" will appear in the Play-out Control area if a sub loop is defined.

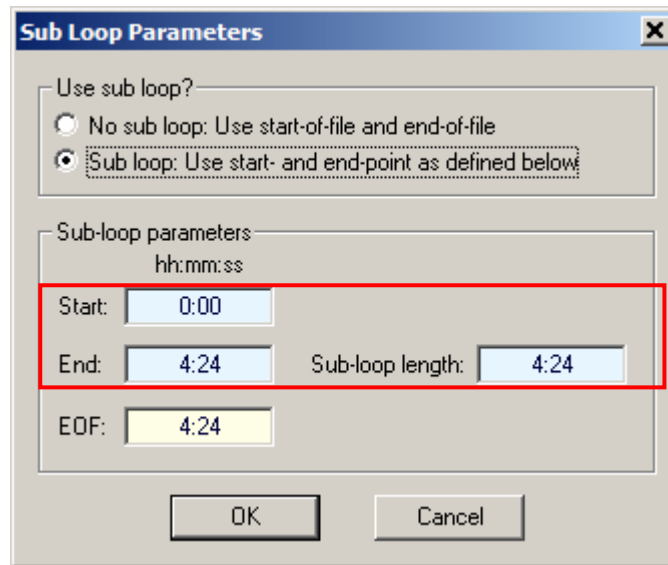


Figure 7 Creating a Sub Loop

### 5.4. Modulator Settings

DekTec modulator devices, such as the DTA-107 QPSK modulator, require additional setup. You may access these setting by clicking on Edit > Modulator Settings. This will open a window that contains the modulation parameters.

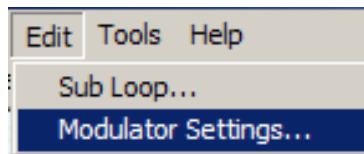


Figure 8 Selecting Modulator Settings

You may now specify the output frequency and the convolutional (Viterbi) rate. Other DekTec modulator cards (DTA-110/115) will have similar, as applicable, settings.

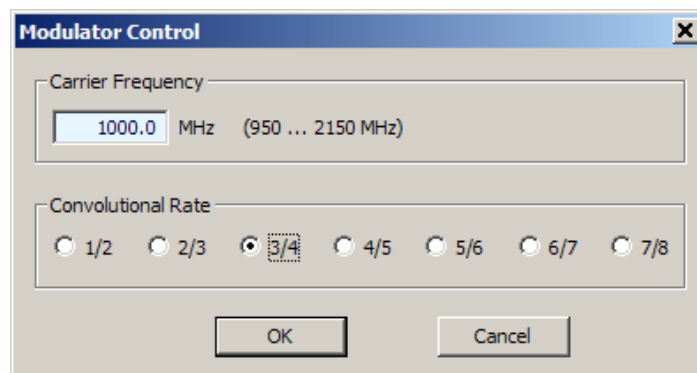


Figure 9 Modulator Control Settings

## 5.5. Error Injection

The StreamXpress application allows you to inject lost packet, bit, and byte errors into the transport stream that is playing. These errors can be useful for testing downstream equipment in a lab environment. Click on Tools > Error Injection to open the Error injection window.

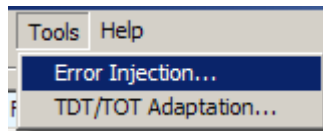


Figure 10 Selecting Error Injection

Select the error(s) that you wish to inject. You will also need to enter the probability (number of errors per 'n' packets) and the number of errors per packet (for bit and byte).

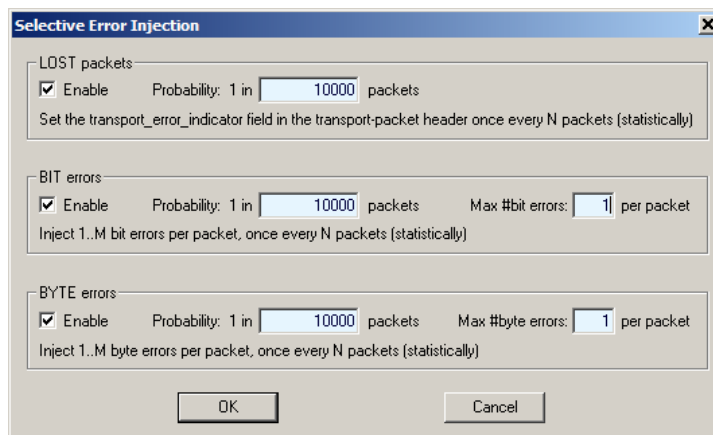


Figure 11 Error Injection Parameters

## 5.6. TDT/TOT Adaptation Settings

The StreamXpress application allows you to change the time and date in the TDT/TOT tables on a DVB compliant transport stream. You may choose this option by clicking Tools > TDT/TOT Adaptation.

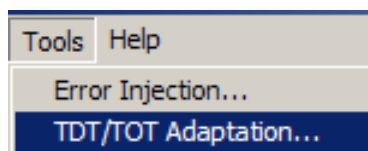


Figure 12 TDT/TOT Adaptation Selection

You may choose not to change the time and date in the original file. This will, however, be updated on concurrent loops if Adapt TDT/TOT is selected in the Wrap-Around settings. If you choose to change the TDT/TOT timing, you have the option of using either the PC clock or user defining the time and date.

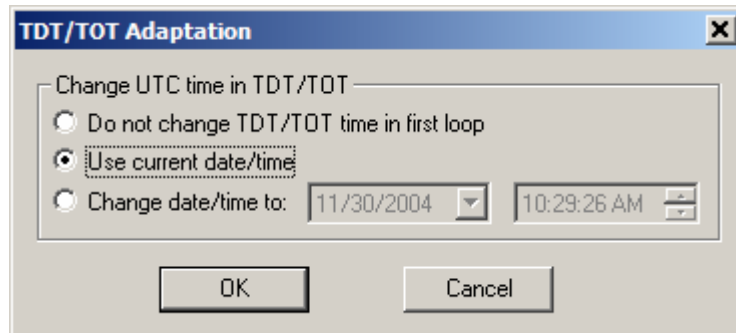


Figure 13 TDT/TOT Adaptation Settings

## 5.7. Help

The Help > About selection will display the current version of StreamXpress software that you are running.

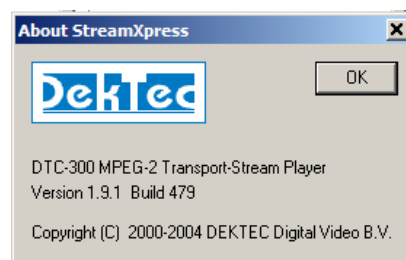


Figure 14 Software Version

## 6. Stream Analysis Window Panes

The StreamXpress application includes a basic analysis feature that allows you to view the make-up of the transport stream file selected for play-out. Transport stream contents, PID, and file information views are included to help you determine the contents of the transport stream file.

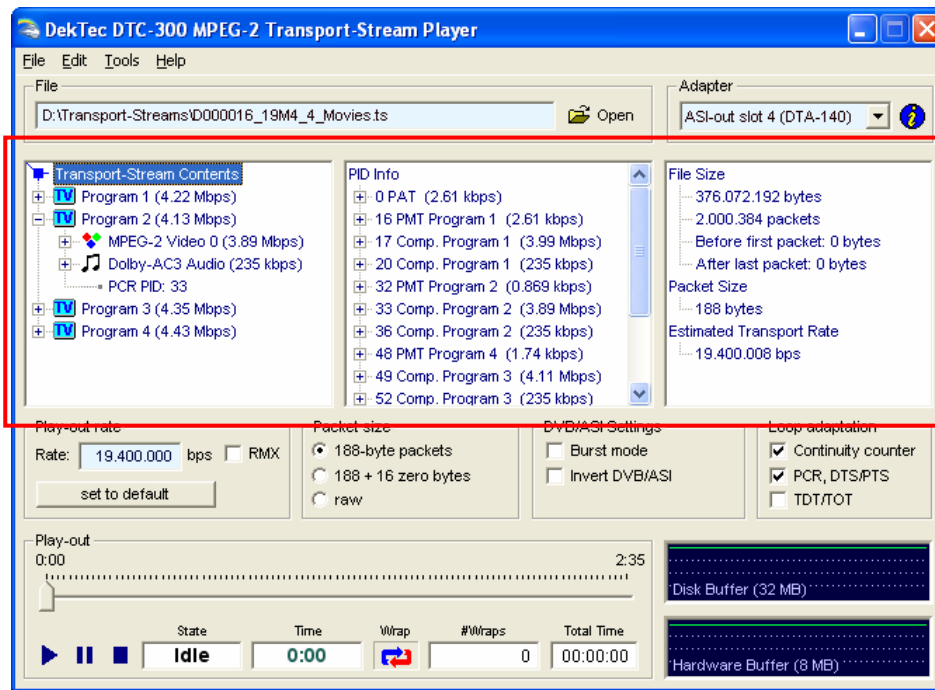


Figure 15 Stream Analysis Window Panes

### 6.1. Transport Stream Contents View

The Transport Stream Contents view displays the transport stream via the services (programs) contained in the transport stream. You may expand the analysis down to the individual components (PID's) and even further by left-mouse clicking on the "+" signs next to the tables.

### 6.2. PID View

The PID view displays the transport stream in ascending numerical value of PID's (Packet Identification Numbers) contained in the stream. A "+" sign indicates that there is more information about the PID that may displayed by left-mouse clicking on the "+" sign. PID numbers are displayed in decimal.

### 6.3. File Information View:

The file information view displays the file size in bytes and packets. It also shows where the transport stream payload starts and ends in the file. Packet size and transport stream bit-rate are also displayed.

## 7. Play-out Parameters

The StreamXpress application incorporates several settings that allow you to tailor the stream play-out to meet your specific requirements. You are able to change the bit-rate, packet size, ASI parameters, and wrap-around settings.

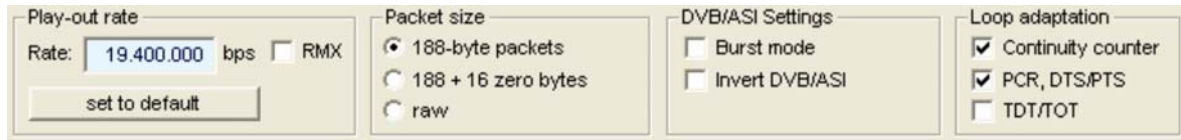


Figure 16 Play-out Parameter Settings

### 7.1. Play-out Rate

The play-out bit-rate will originally be derived from the PCR values contained within the stream. You may edit this value from 1b/s – 214Mb/s (depending on your adapter's capabilities) by clicking in the Rate box and typing the desired value. You may return to the PCR derived value by clicking on the "set to default" button.

The RMX mode (re-multiplexing mode) check-box controls how the StreamXpress behaves when the play-out rate is set to a bit-rate higher than the original bit-rate of the file. If RMX mode is disabled the StreamXpress will play the file at the specified rate without NULL-packet stuffing (i.e. no re-multiplexing; simply play file at the specified rate). If RMX mode is enabled the StreamXpress will re-multiplex the Transport-Stream, by adding NULL-packets, to match the set bit-rate.

### 7.2. Packet Size

You have the option of changing the transport stream packet size. Selecting raw will play the file at the original packet size. 188 byte packets will force the transport stream to 188 bytes by stripping off any Reed-Solomon (RS) or other encoding. 188 + 16 zero bytes will play the file at a 204 byte packet rate by using zero bits to fill out the 16 bit RS field.

### 7.3. DVB/ASI Settings:

These settings affect the parameters of the ASI transport medium if a DVB/ASI adapter (e.g. DTA-100/140) is used. The ASI medium will be in packet mode by default. ASI burst mode may be selected to provide a burst-type ASI medium for testing downstream equipment. You also have the option of inverting the ASI signal.

### 7.4. Wrap-Around Settings

The StreamXpress application allows you to play a file in a continuous loop (Wrap mode). The wrap-around settings allow you to make a "seamless" loop by adapting the continuity counter so that there is no discontinuity at the loop point. You may also choose to adapt (re-stamp) the PCR and PTS/DTS time stamps to further increase the quality of the loop point. Adapting the TDT/TOT tables will create a stream that has a continually updated time and date (see the TDT/TOT Adaptation settings section for more information).



## 8. Play-out Control

The Play-out Control portion of the StreamXpress application is where you will actually initiate and manipulate play-out of the selected file. This area also provides information regarding play-out progress.

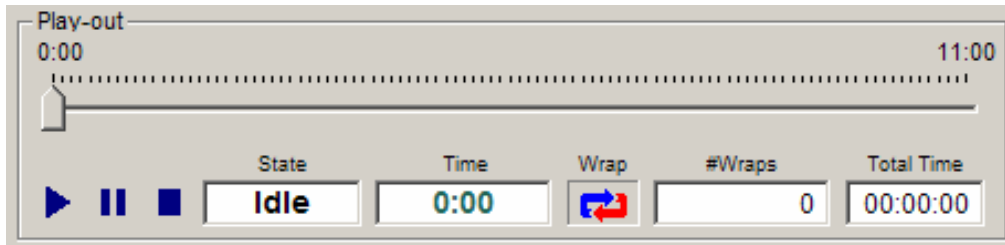


Figure 17 Play-out Controls

### 8.1. Sliding Pointer

The Sliding Pointer serves two purposes. The first is to provide a reference indicating the position in the file that is playing. The second is to allow you to start play-out at a specific location. To define a starting location, stop file play-out, and place the mouse cursor over the pointer and hold the left-mouse button down while dragging the pointer. Press the play button to start playing. You may also change the play-out point while the file is playing.



### 8.2. Play, Pause and Stop Buttons

You will left-mouse click on these buttons to start, pause, or stop a play-out operation.



### 8.3. Wrap-Around Button

This button allows play-out to occur in a continuous loop. "Seamless" looping is achieved by selecting the correct Wrap-Around settings discussed in the previous section of this manual.

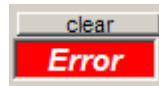


### 8.4. State

The State indicator displays the status of play-out. Indications include Play, Pause, Done (Stop), Idle, and Error.



An error message is in red and indicates that there is a play-out problem.



A clear button will also appear during an error state, allowing you to extinguish the error message. Error messages generally indicate a buffer underflow caused by playing a file at a bit-rate higher than the capacity of the drive system of your PC. See the Specifications and Minimum Requirements section for more details on drive selection.

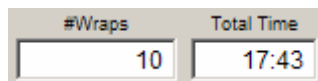
## 8.5. Time

The Time indicator displays the position in the file that is currently playing. This will increment up and start over at zero when the file loops. It coincides with the position of the Sliding Pointer.



## 8.6. # Wraps/Total Time

The #Wraps and Total Time indicator shows you how many times a file has looped and the running time since file play-out was originally started.



## 9. Buffer Information Window

The Buffer Information window shows the status of the Disk and Hardware buffers. This is a simple indicator of system performance in relation to the play-out bit-rate. Both buffers should show a relatively flat graph line near the top of the graph scale during normal operation. Playing a file at a bit-rate above your PC's capability will result in the graph line dipping to the bottom of the graph scale (or becoming erratic), first on the Hardware buffer and then on the Disk buffer.

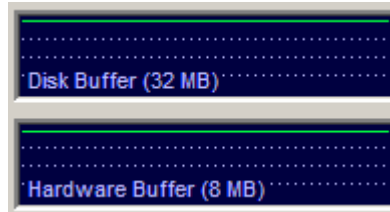


Figure 18 Buffer Window (Normal)

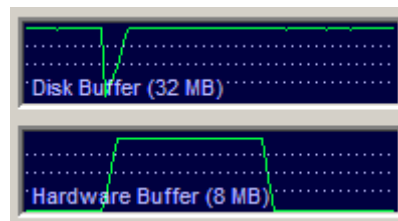


Figure 19 Buffer Window (Error Condition)