ForwardT Plugins

FDVideoMixer

AV Mixer For Work On Air

Revision as of
February 25, 2010

User's Guide

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Introduction

The FDVideoMixer program represents audio and video mixer. The program is designed for live broadcast organization with switching between video sources on-the-fly.

FDVideoMixer is the supplemented program option for ForwardT line products. It is also intended for solutions based on the FD300 board.

For more information on the instruction on FDVideoMixer installation and its registration, refer to the «Plugins Setup. User's Guide» that can be downloaded at

http://www.softlab-nsk.com/docs.html

General Information

1. Purpose

The program is designed for switching between audio and video sources and sound control when broadcasting is made. The program allows:

- to switch between video sources on-the-fly;
- to perform video data from the source where switching will be made;
- to organize output image switching via «transitions» of specified duration and using video effects;
- to adjust audio level.

2. Applied Video Sources

The program provides with a possibility to use the following image sources:

- external devices that are connected to the FD300 board video inputs;
- video files (AVI, MPEG, TML);
- graphic files (PNG, BMP, DIB, JPG, TGA);

3. Program Use Requirements

1. Installed FD300 board.

   Only one program instance can be launched via one FD300 board simultaneously.

2. Installed ForwardT Software package, version not less than 5.0.8.

3. Plugin registration (for more information, see the "Plugins Setup. User's Guide").

4. Terminology

Current source is a video source from which the image comes to the FD300 board output in the current time.

Successive source is a specified source where switching will be made.

Decoder transition delay is the time for preparing the image to be transmitted to the FD300 board output from the external source where switching will be implemented.

Transition clip is an AVI file used for playing video effect back when switching from one source to another one is made.

5. Switching Between Video Sources

Only one source can be in the Current state and the other in the Successive state simultaneously.

Switching from the current source to the successive one can be implemented:

- via user's command;
- automatically when video file is complete by playing back completely.

After the switching is complete the successive source obtains the Current state. The source that was a current one obtains the Successive state automatically.

6. Switching Modes Between Video Sources

There are 2 modes of switching between video sources:

- Autotake off enables «sorting» successive sources and previewing images coming from sources before switching;
- in the Autotake on mode switching between video sources is implemented after selection of the successive source. This mode disables the opportunity to preview the image from the source.

7. Image Change

Change of images may be implemented either via transition or without it during the switching between the current and the successive video sources.

The program provides with a possibility to set duration and to select video effect of transition.

8. Video Effects, Clips of Transition

Two types of video effects of transition are used in the program:

- program effect that is a video effect whose algorithm is recorded in the program;
- effects based on clips of transition.

Clip of transition presents a ready-made AVI file. A set of transition clips is included in the FDVideoMixer program package. Clips are located in the ~\Plugins\FDVideoMixer\Transitions folder, where ~ denotes a full path to the folder where the ForwardT Software is installed.

Clip of transition can be created independently e.g. via the Adobe Premiere, Sony Vegas applications, etc.

Clip of transition have the following requirements:

- all frames color – greyscale (0-255);
- first frame – black;
- last frame – white;
- scan – progressive.

The name of the file with the clip of transition is displayed as the name of video effect in the FDVideoMixer program window.

9. Sound Control

The program provides with a possibility to control audio level of sound coming from external devices connected to audio inputs of the FD300 board (6 mono or 3 stereo).

Configuration of input signals mixing is made via the FDSoundControl program before the launch of the FDVideoMixer program. For more information on the FDSoundControl program, see the «FD300 Sound Control. Sound Settings. User's Guide».

The sound passes from the board input to the board output if current source is among those connected to the board. The sound from the file is received by board audio output when current video source is a video file.

Program Launch and Exit from the Program

1. Program Launch

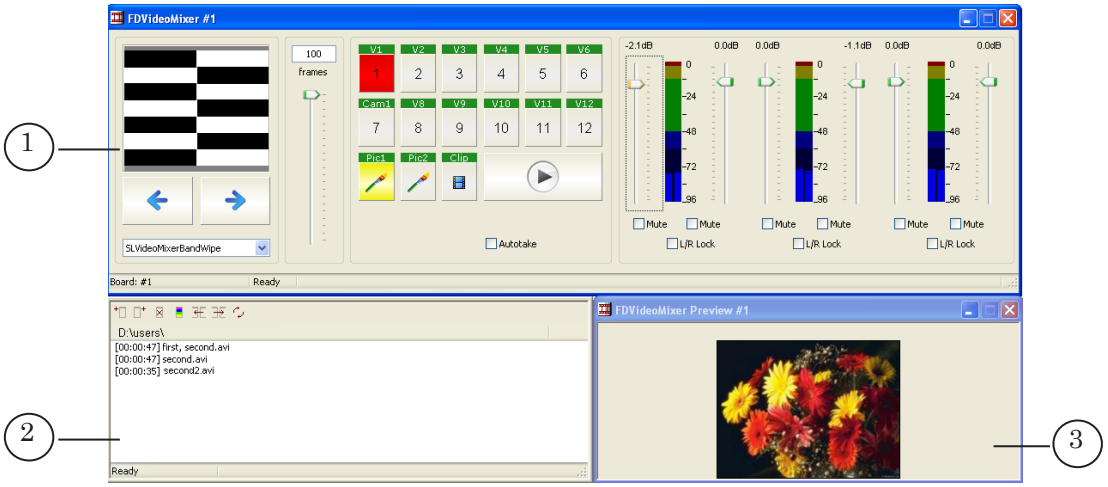
The program can be launched by ~\Plugins\FDVideoMixer\FDVideo-Mixer.exe file, where ~ denotes a full path to the folder where the ForwardT Software is installed.

There are several ways to launch the program. They are:

- the program shortcut located on the desktop (for more details refer to the «Creating the Shortcut to Launch Specified Program Instance» section);
- the Start menu command: Programs > ForwardT Software > Plugins > Video Mixer;
- the command line. The format of the line is the following:
  "ProgramFile" #N
  where:
  - ProgramFile is a full path to the FDVideoMixer.exe file;
  - N is the index of launched program instance.

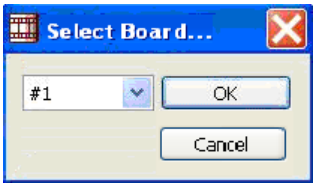
Main and child windows appear when the program is launched. All windows have configurations specified during the last program session.

The following picture presents recommended workspace configuration: (1) – main window; (2) – window with clips list; (3) – preview window.



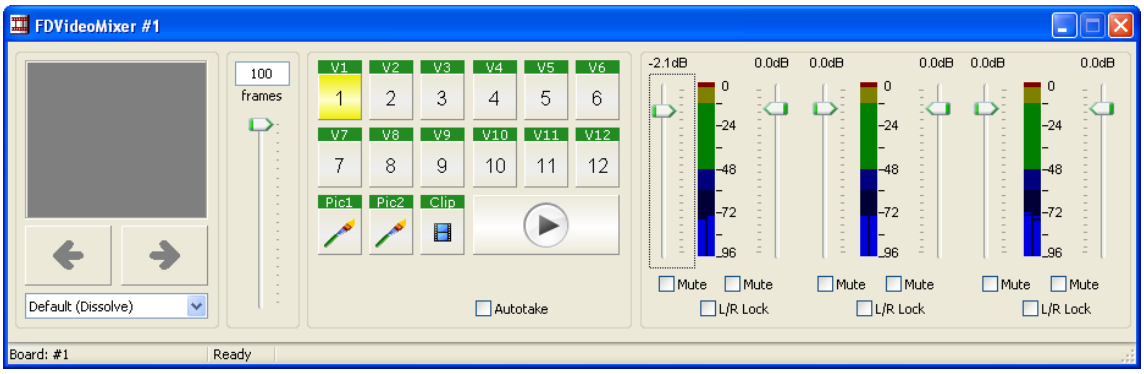
2. The First Program Launch

When the program is launched first time the Select Board...dialog box appears automatically if several FD300 boards are installed on the PC.



Select the board that is registered for FDVideoMixer.

The main program window with default settings also appears when the program will be first launched.



3. Completing of Work With the Program

There are 2 ways to close the program:

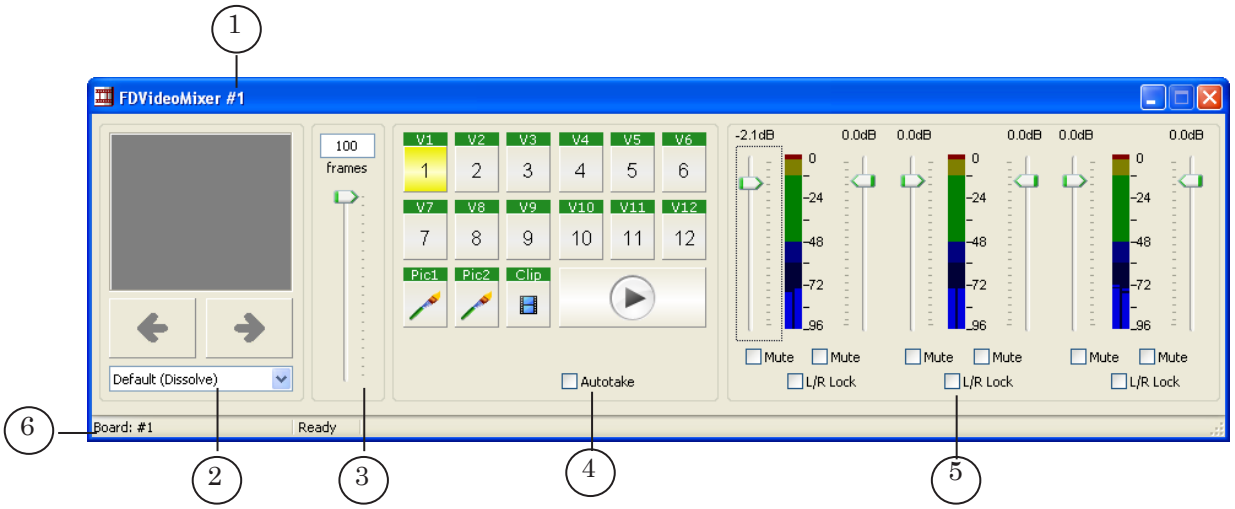
- by opening the Close system menu;
- by pressing the button located on the title bar of the main program window.

Configured settings are saved when the program is closed.

Program Interface

1. Main Window

The title bar of the main program window contains the information on the program instance index (1).



Control elements located in the main program window are used to execute the following operations:

- selection of transition video effect (2);
- setting of transition duration (3);
- switching between video sources (4);
- audio level controlling (5).

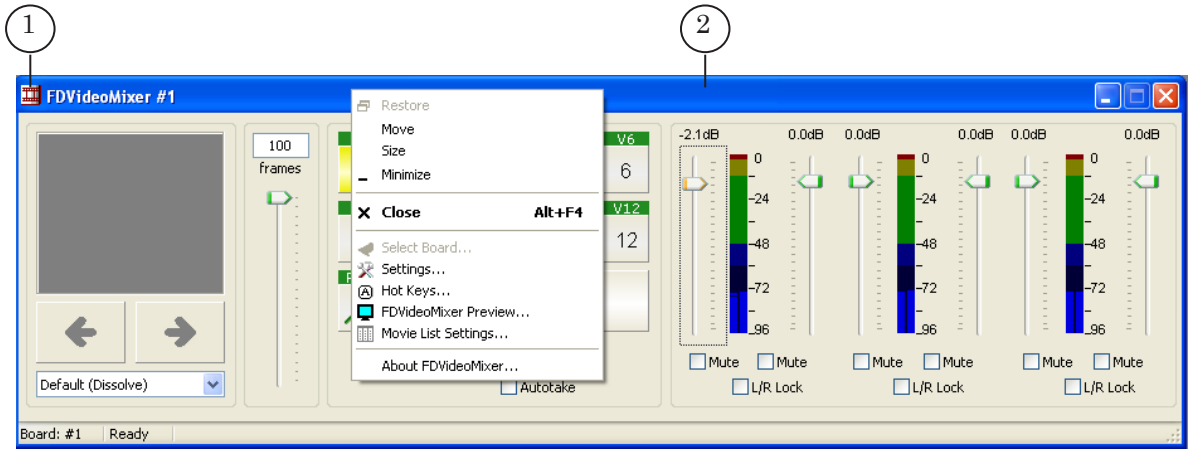
The main window progress bar (6) contains the information on:

- used FD300 board number;
- progress of work when switching between video sources is implemented.

2. System Menu of the Main Program Window

The system menu of the main program window can be opened by:

- left-clicking the program label located on the title bar of the main program window (1);
- right-clicking any place of the title bar of the main program window (2).



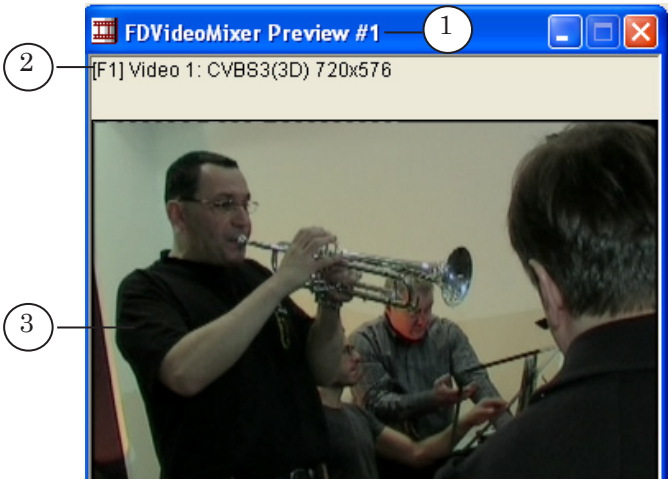
Commands of the system menu of the main program window are used for resizing, closing main program window and opening of child windows.

Table 1. Commands of the System Menu

Command	Purpose
Restore Move Size Minimize	The commands are used to resize and to close main program window.
Close	Denotes quitting from the program.
Select Board...	Opens the Select Board... dialog box.
Settings...	Opens the Settings... dialog box.
Hot Keys...	Opens the Hot Keys... dialog box.
FDVideoMixer Preview...	Opens the FDVideoMixer Preview... dialog box.
Movie List Settings...	Opens the Movie List Settings... dialog box.
About FDVideoMixer...	Opens the About FDVideoMixer... dialog box.

3. Preview Window

Preview window allows to preview video data from the successive source.



Preview displays:

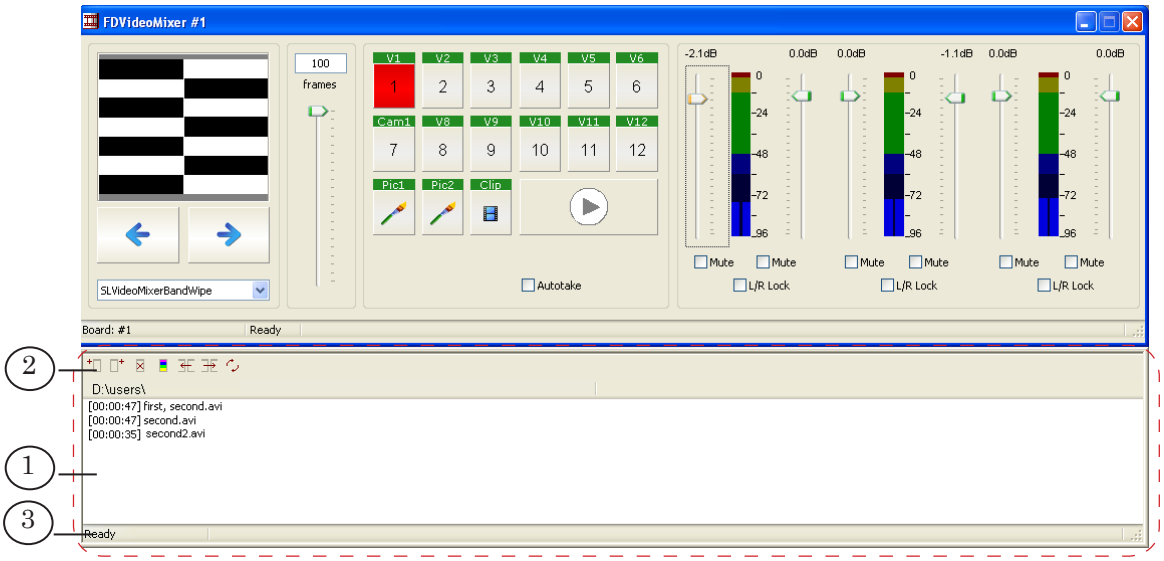
- the number of the FDVideoMixer program instance (1);
- information on video source (2);
- video image itself (3).

This window can be opened with the FDVideoMixer Preview... item in the system menu of the main program window.

Preview window does not display video effects of transition.

4. Window with Clips List

Window with clips list is intended to control broadcasting of video files on air. The window with clips list appears automatically if its settings are set in the program (for more information, refer to the «General Workflow With the Program» and «Configuration of Clips List» sections).



The clips list is located in window work area (1) and can be configured by the user.

The list contains file names that are grouped in columns. Every column corresponds to the certain folder located on the disc. The column title presents a full path to this folder. The column contains file names from the folder that fit to the set filter. The folder name and filter are selected when the group (column) configurations are implemented.

Buttons for working with groups of files are located on window toolbar (2).

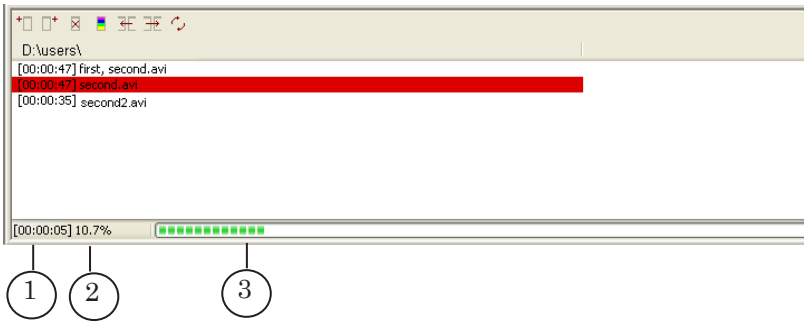
Table 2. Toolbar Buttons

Button	Purpose
	Inserts a new column before selected one.
	Adds a new column after selected one.
	Deletes selected column.
	Modifies selected column.
	Moves selected column to the left.

Button	Purpose
	Moves selected column to the right.
	Refreshes group file list.

When video files are playing the following information is displayed in the status bar (3):

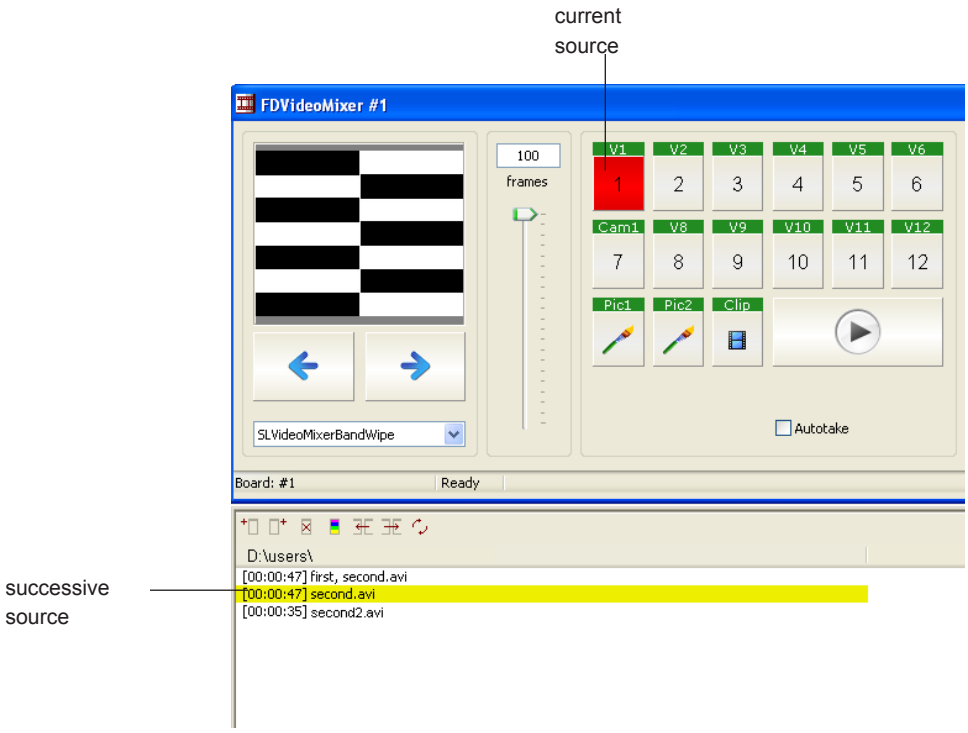
- the time from the start of video file playback (1);
- the part of video file which has already played (in percent) (2);
- progress bar (3).



5. Current State Indicators

Corresponding colour of the buttons and in addition lines with file names display the current source state:

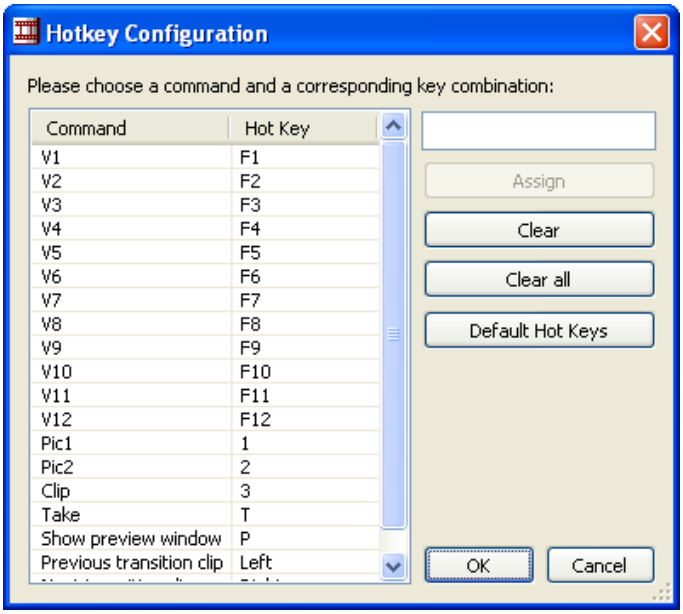
- red denotes current video source;
- yellow denotes successive video source;
- orange denotes that video source is being switched.



6. Hot Keys

Some FDVideoMixer program commands may be activated via hot keys.

Hot keys can be viewed and configured in the Hotkey Configuration window.



The window can be opened via the Hot Keys... command in the system menu of the main program window. Refer to the «Hot Keys Configuring» section within the «Work With the Program» chapter for more information on hot keys configuring.

General Workflow with the Program

1. Preparing For Broadcast

General workflow to prepare for broadcast using the FDVideoMixer program is given below:

1. Connect external devices to the FD300 board.
2. Configure mixing of input audio channels in the FDSoundControl program.
3. Launch FDVideoMixer.

The following steps are implemented in the FDVideoMixer program.

4. Select a necessary FD300 board if several boards are installed on the computer.
5. Correspond the buttons of the main window to the video sources.
6. Configure clips list.
7. Select a folder with clips of transition and select video effect.
8. Configure transition duration.
9. Set the Decoder Transition Delay parameter value.
10. Configure the control of the group of audio inputs.
11. Open the preview window.

The following paragraphs contain the information on completing steps listed above.

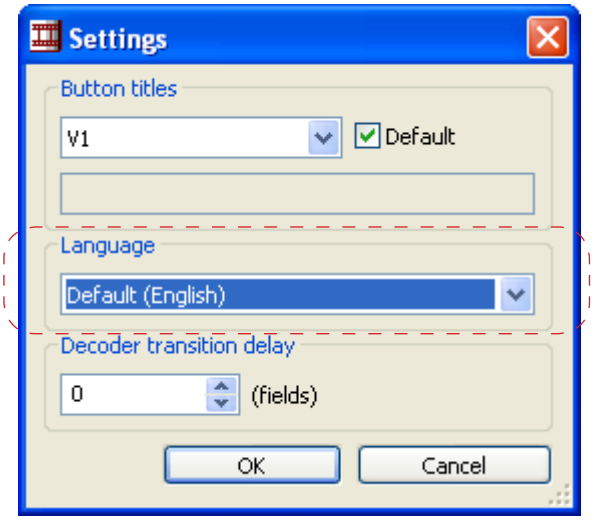
For more information on the work with the FDSoundControl program, see the «FD300 Sound Control. Sound Settings. User's Guide».

2. Program Interface Language

When the the program is launched first time the language corresponds to the system one.

Complete the following steps to change language of the program interface.

1. Select the Settings... option in the system menu.
2. Select program interface language in the Language drop-down list in the appeared Settings window.



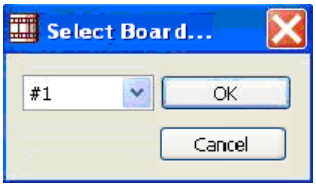
3. Board Selecting

It is possible to select a necessary FD300 board for program work if several boards are installed on the PC.

✔ **Important:** Only the boards with registered FDVideoMixer plugin can be used in the FDVideoMixer program.

Complete the following steps to select the board:

1. Select the Select Board... command in the system menu.
2. Select the number of the required board.



Tip: It is recommended to select the board before on air starts.

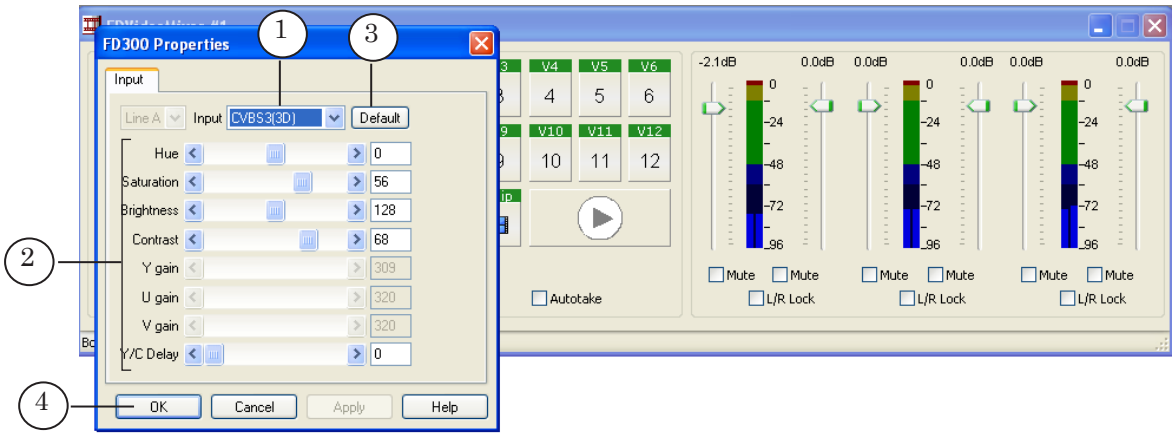
4. Configuring of Buttons For Video Sources Switching

4.1. V1–V12 Buttons Configuring

V1–V12 buttons are intended for switching between external video sources connected to the FD300 board.

Complete the following steps to correspond the button to the external device:

1. Right-click mouse button one of V1–V12 buttons.
2. The FD300 Properties window appears.



Define configurations in this window:

- from the Input (1) drop-down list select the FD300 board video input to which the desired video source is connected;
- configure parameters of input video (2). Click Default (3) when needed to apply default parameters.

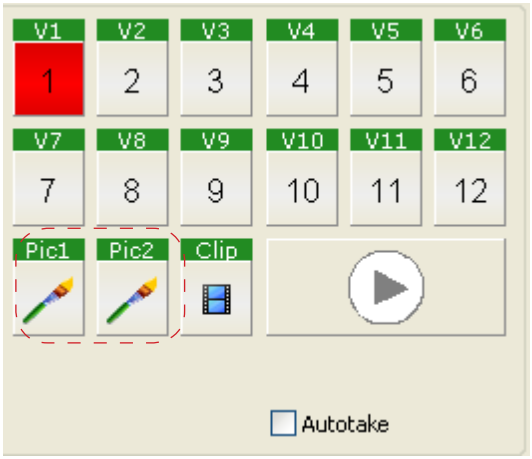
3. Click OK (4) to close the window and save the settings.

4.2. Configuration of Pic1 and Pic2 Buttons

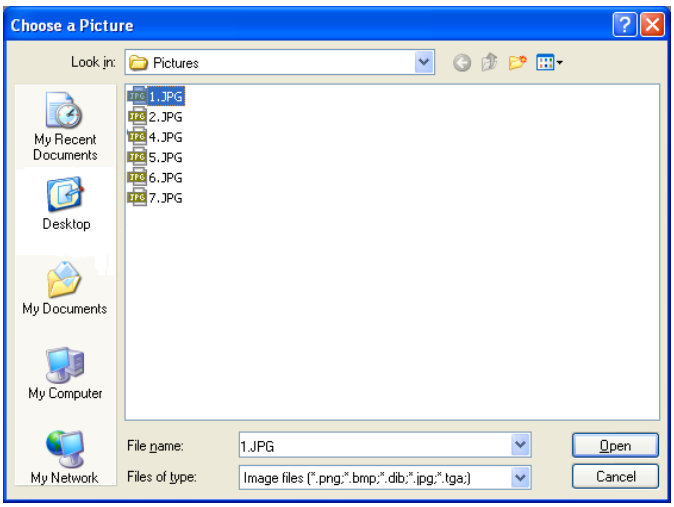
Pic1 and Pic2 buttons are intended to switch default pictures on. Default pictures are graphic files with different extensions (PNG, BMP, DIB, JPG, TGA).

Complete the following steps to correspond graphic file to the button that will switch a default picture on:

1. Right-click on the Pic1 or Pic2 button.



2. The Choose a Picture window appears.



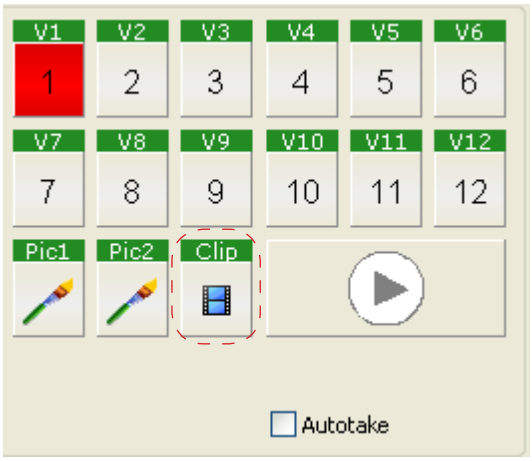
3. Select the file and click Open.

4.3. Configuration of the Clip Button

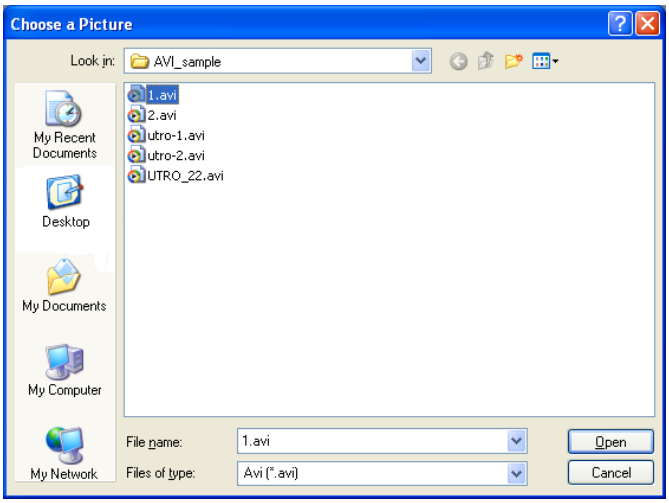
The Clip button is intended to switch a default clip on. The clip may be of AVI, MPEG, TML type.

Complete the following steps to correspond the Clip button to its video file:

1. Right-click the Clip button.

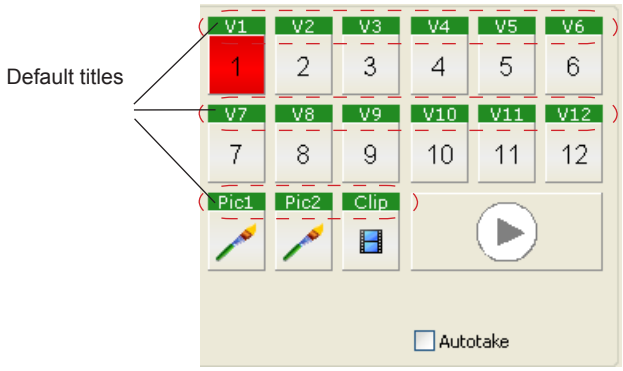


2. Select video file in the appeared Choose a Clip window and click Open.



4.4. Renaming of Buttons

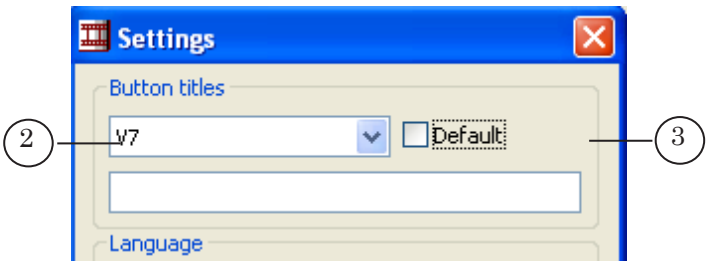
The program provides with a possibility to rename V1-V12, Pic1, Pic2 and Clip buttons.



Complete the following steps to rename the button:

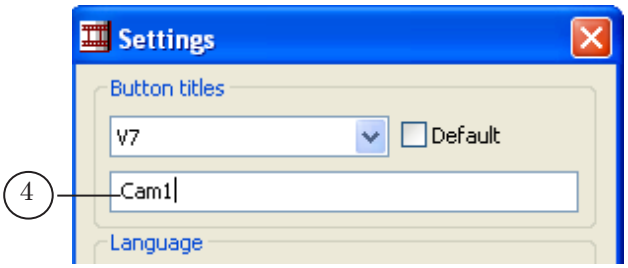
1. Right-click the title area of the button (1):

2. The Settings window appears. The default title will be displayed in the drop-down list of the Button Titles group (2).

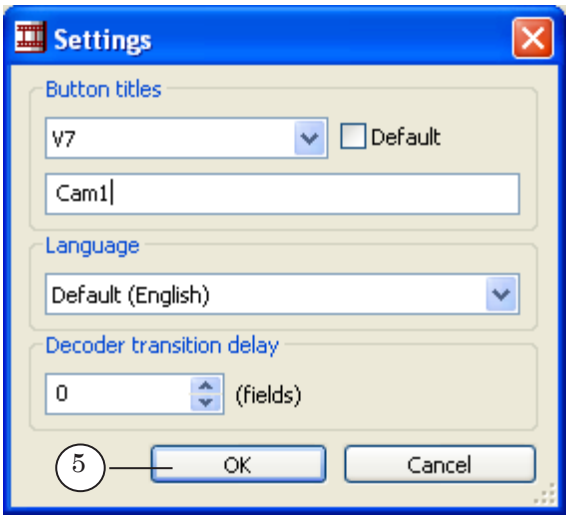


3. Tick off the Default (3) check mark.

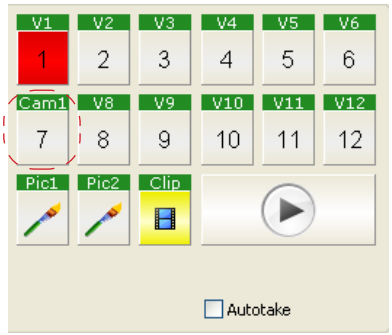
4. Type a new title of a button in the text box (4).



5. Click OK (5).

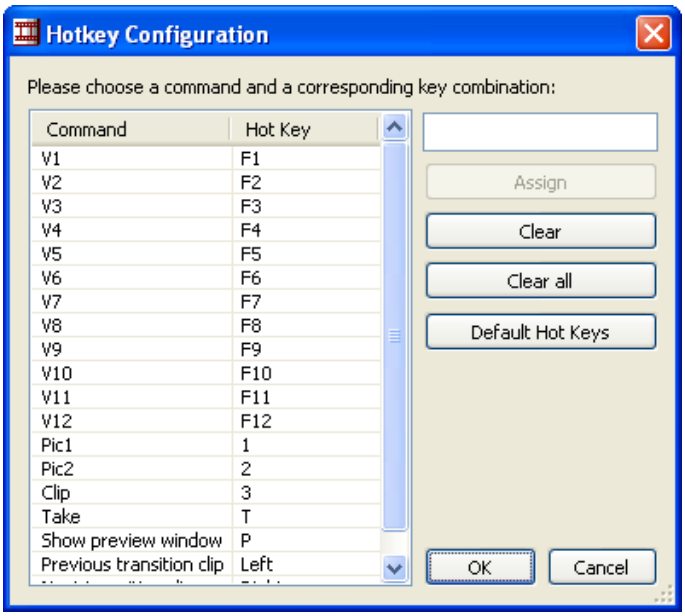


Finally button title will be changed (in our case V7 was renamed into Cam1)

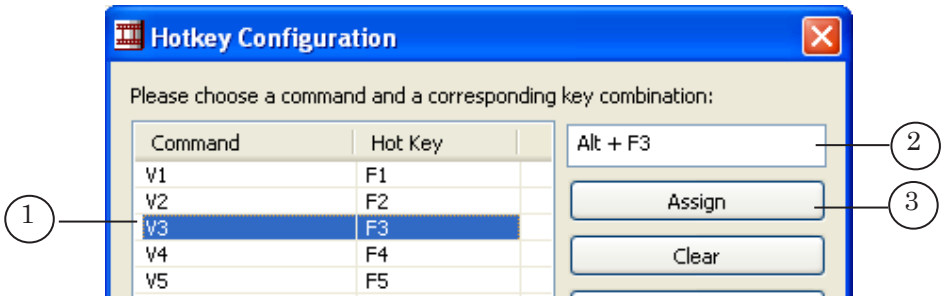


5. Configuration of Hot Keys

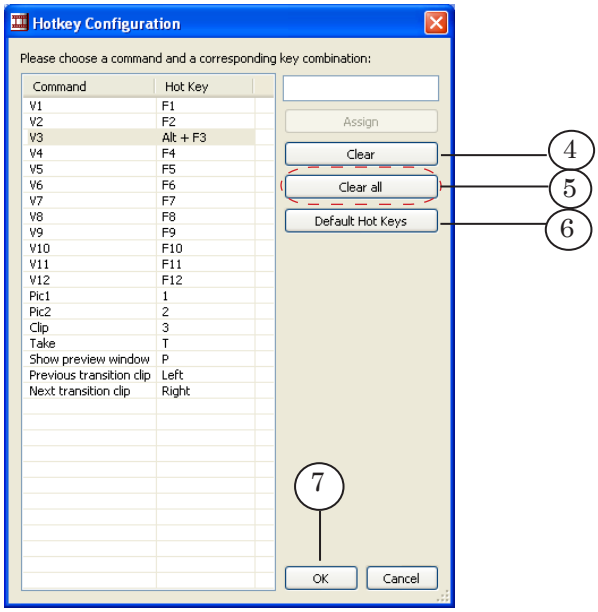
1. Select the Hot Keys... command in the system menu of the main program window.
2. The Hotkey Configuration window appears.



3. Select by right clicking the line with command to be configured (1) in the table of commands and hot keys correspondence.



4. Enter desired key combination in the text box (2) by setting cursor in the text box and pressing desired keys.
5. Then click Assign (3).
6. Specified key combination will be displayed in the column of the Hotkey Configuration table.



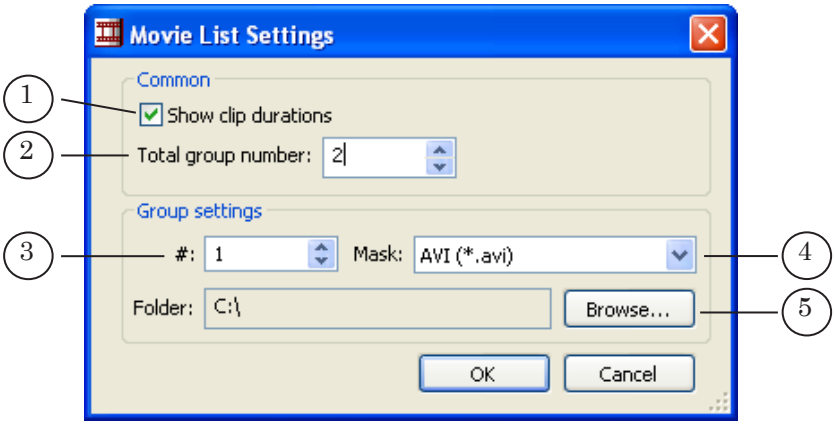
7. Repeat steps listed above (3–5) to configure all necessary commands.
8. Right-click the command line and then click Clear (4) when needed to reset hot keys settings for the specified command. After resetting there will be no hot key for a command. Click Clear All (5) to reset the settings of all hot keys for all commands.
9. Click Default Hot Keys (6) if it is necessary to assign default hot keys for commands.
10. Click OK (7) to apply all settings and to close the window.

6. Configuration of Clips List

At least one clip group must be configured for the window with movie list to be opened.

Select Movie List Settings… in the system menu of the main program window to configure clip group. Complete the following steps in the appeared window:

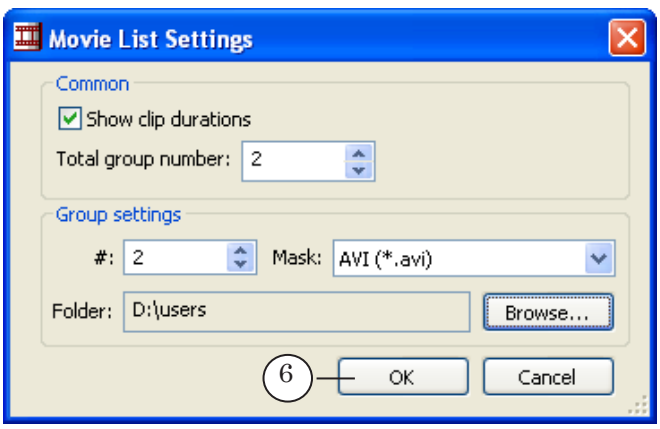
1. Tick on the Show Clip Durations (1) check mark if it is necessary to display duration of video clips.



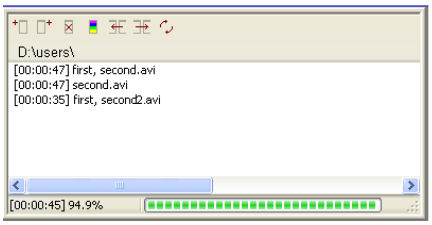
2. Set total number of groups (columns in the window) with plus and minus controls in the Total Group Number (2) spin box.
   Defined number of groups with default settings will be created. All groups will have the same settings: Mask – AVI (*.avi), Folder – C:\.

3. Configure every group in turn:
   - select the number of configured group in the spin box # (3);
   - select group files filter in the Mask drop-down list (4);
   - click Browse… (5). Select a folder with files in the appeared window.

4. Click OK (6) when configurations are made.



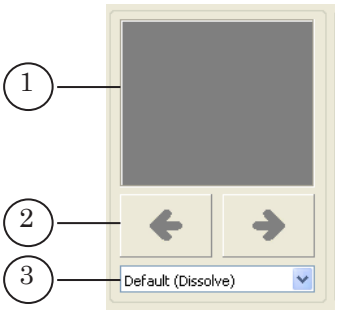
5. Configured groups with files will be displayed in the window with clips list.



7. Selection of Transition Video Effect

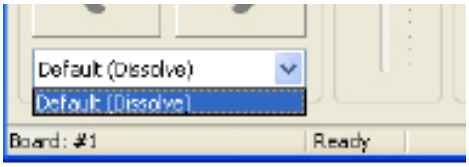
7.1. Elements for Viewing and Selecting of Video Effect

Video effect is selected via the group of elements located in the main program window.



The group contains the following elements:

- filed for schematic display of the current video effect (1). Left-click field area to view the effect in progress;
- elements for selection of video effect:
  - buttons to select video effects (2);
  - drop-down list with the names of video effects (3). If the folder with clips of transition is not specified in the program then only the Default (Dissolve) video effect will be displayed in the drop-down list.



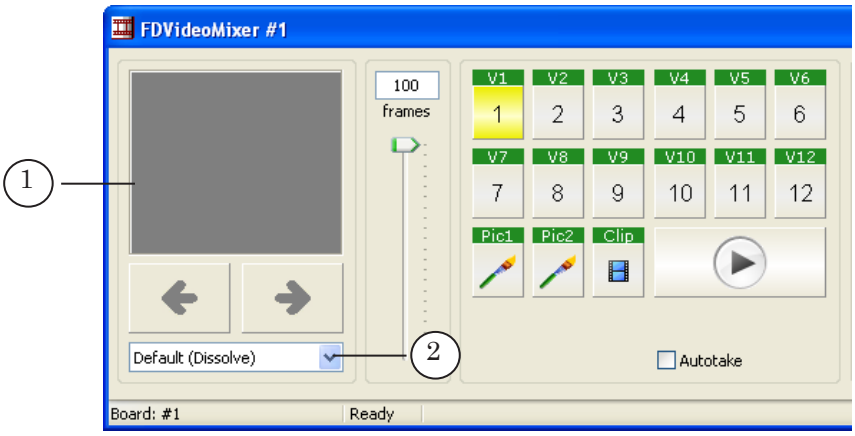
7.2. Specifying the Folder Containing Clips of Transition

Specify a folder with clips of transition to make video effects based on clips of transition available.

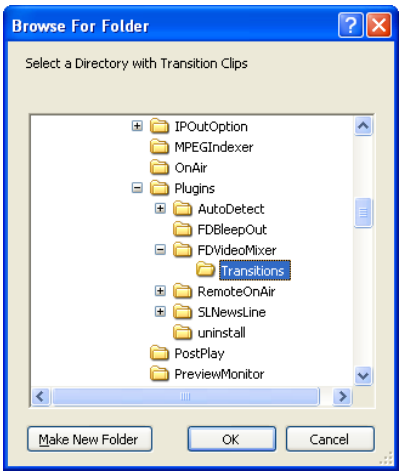
The FDVideoMixer program package includes a set of clips of transition. Clips are located in the ~\Plugins\FDVideoMixer\Transitions folder, where ~ denotes a full path to the folder where the ForwardT Software is installed.

Complete the following steps to specify the folder with clips:

1. Right-click the area where video effect is displayed (1).



2. Select the folder with clips of transition in the appeared Browse For Folder window and click OK.



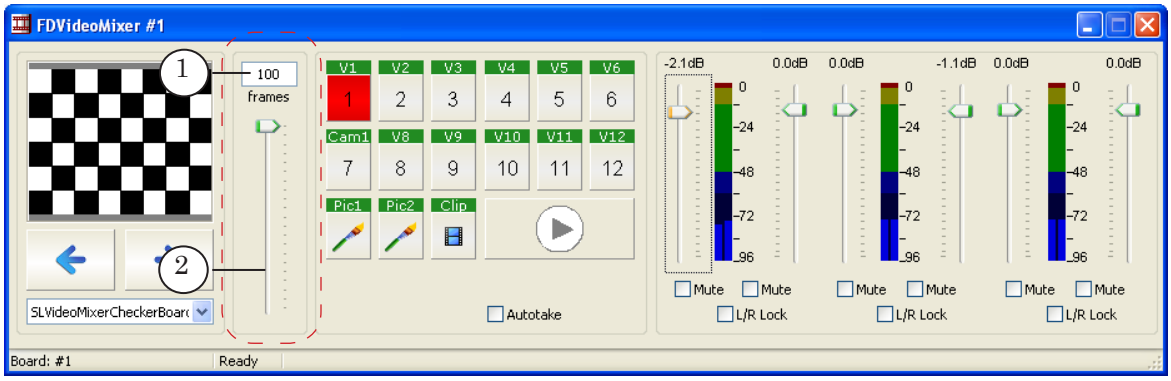
The names of all AVI files from this folder will be automatically added to video effects drop-down list (2).

Tip: It is recommended to store transition clips separately from other AVI files.

8. Configuration of Transition Duration

8.1. Interface Elements

Configuration of transition duration is implemented via group of elements. This group is located in the main program window.



The group contains the following elements:

- text box for displaying and editing current value of transition duration (1);
- slidebar (2).

8.2. Defining the Duration Value

Configuration of transition duration is implemented before the start of switching between video sources.

The duration is set in frames. The range of available values is 0–100 frames.

There are 2 ways of setting the value of transition duration:

- by typing the number in text box (1);
- by moving the slider (2).

Note: The duration of playing video effects based on clips transition does not depend on the number of frames in the clip.
At the same time:

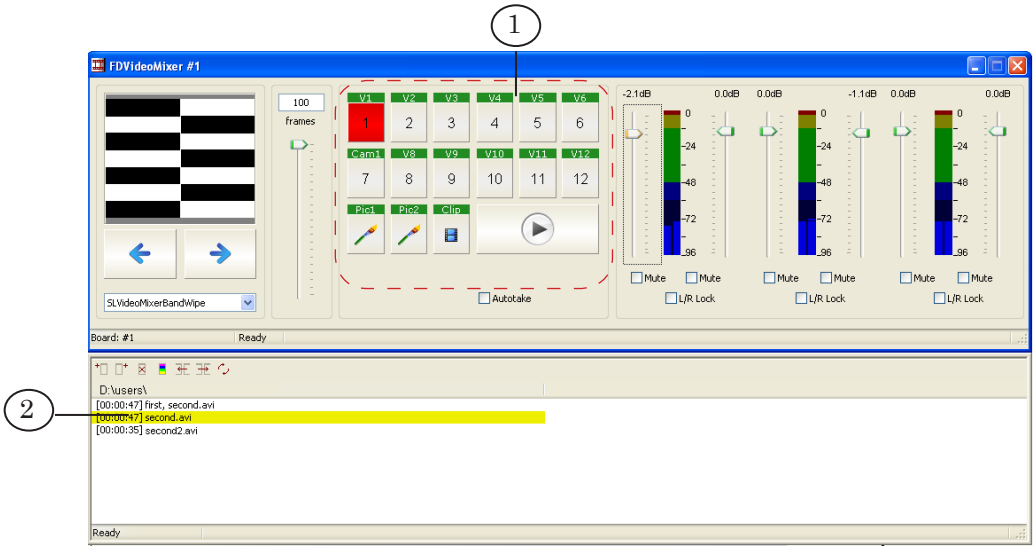
- only some clips will be used if the number of clip frames exceeds the specified transition duration when the video effect is playing. Its selection is made according to the program algorithm;
- if the number of clip frames is less than the specified transition duration when video effect is playing then missing frames will be generated according to the program algorithm.

9. Switching Between Video Sources

9.1. Interface Elements

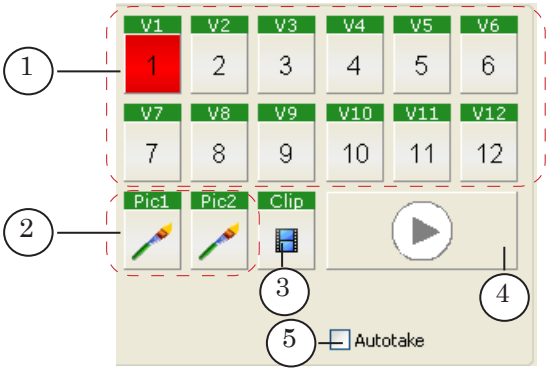
Switching between video sources can be implemented via:

- buttons located in the main program window (1);
- the window with movie list (2).



Buttons located in the main program window are:

- buttons for the selection of:
  - external device, connected to the FD300 board (1);
  - graphic file (2);
  - video file (3).
- Switch (4) starts playing of video data from the successive source;
- with Autotake check box (5) it is possible to enable/ disable the Autotake mode. If the mark is checked the Autotake mode is on.



9.2. Selection of the Mode for Working With Video Sources

The mode is selected via the Autotake check box located in the main program window.

When the mark is checked the Autotake mode is enabled, the absence of the mark denotes that the mode is disabled.

9.3. Switching When Autotake is Off

Complete the following steps to switch from the current source to the successive one when Autotake is off:

1. Left-click the button corresponding to the successive source in the main window or click the file name in the clips list window. Several sources can be viewed and previewd in the preview window.
2. Click Switch.

9.4. Switching When Autotake is On

Left-click the button corresponding to the source or the file name to switch from the current video source on the successive one when Autotake is on.

9.5. Switching When Video Clip is Played Out

✔ **Important:** Automatic switching to video source marked as the Successive one happens when clip is played out. There is no any difference what mode is selected for the work.

10. Configuration of the Decoder Transition Delay Parameter

10.1. General Information

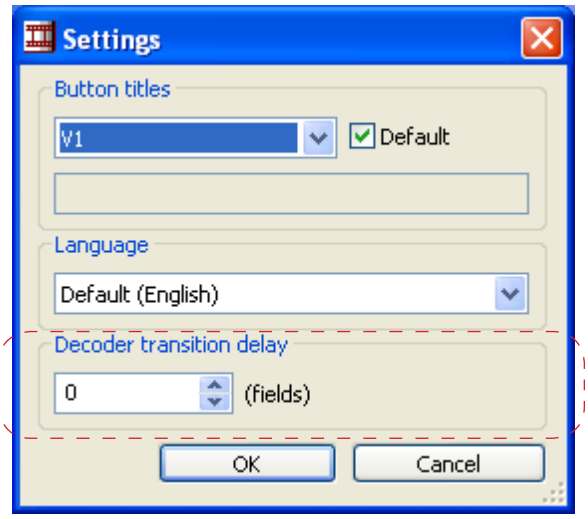
Decoder Transition Delay is the time required for preparing of video data to be transmitted on the FD300 board output from the external source. This parameter is important when several non synchronous cameras are used.

Some distortions may occur in the output image when switching to the external video source is made and when the Decoder Transition Delay parameter value is small:

- the image can be divided up into 2 parts horizontally. The image from the Active source will be displayed in the upper area; the image from the Successive source will be displayed in the lower area.
- image shift, ripple etc.

The parameter value range is 0–100 fields (half frames). An optimal value should be defined by the user according to the specific case (further information below).

The Decoder Transition Delay value is set in the Settings... window. The window can be opened via the system menu of the main program window.



10.2. Specifying the Value

Complete the following steps before selecting the value:

- connect all external video sources, necessary for direct broadcast, to the board;
- correspond video sources to buttons located in the FDVideoMixer main program window;
- turn on the device for the output image displaying (e.g. TV connected to the FD300 board output or the FDPreviewMonitor program).

Setting of the Decoder Transition Delay value is made by the user. Complete the following steps to select the value:

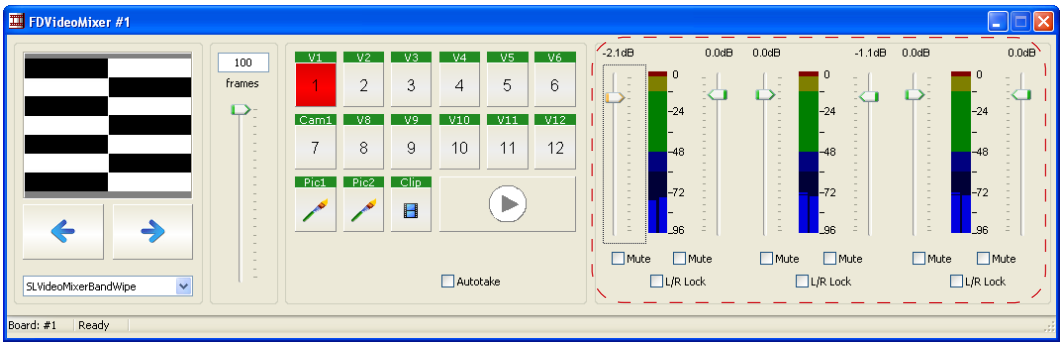
1. Select Settings... in the system menu of the main program window.
2. Set minimal value of the the Decoder Transition Delay parameter in the appeared Settings... dialog box. Click OK.
3. Switch all external video sources via the buttons of the main program window.

   Observe the output image when switching is implemented:
   - if distortion of the output image occurs:
     - open the Settings... window;
     - increase the Decoder Transition Delay value and click OK;
     - repeat all steps from the beginning of the point 3;
   - the selection of the Decoder Transition Delay value is complete when there are no any distortions when switching is implemented.

11. Sound Control

11.1. Interface Elements

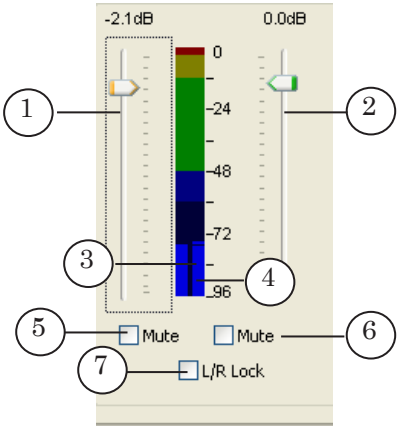
Group of elements for controlling the sound coming on the FD300 board inputs audio level.



The group contains 6 sliders. Every slider corresponds to the FD300 board audio input.

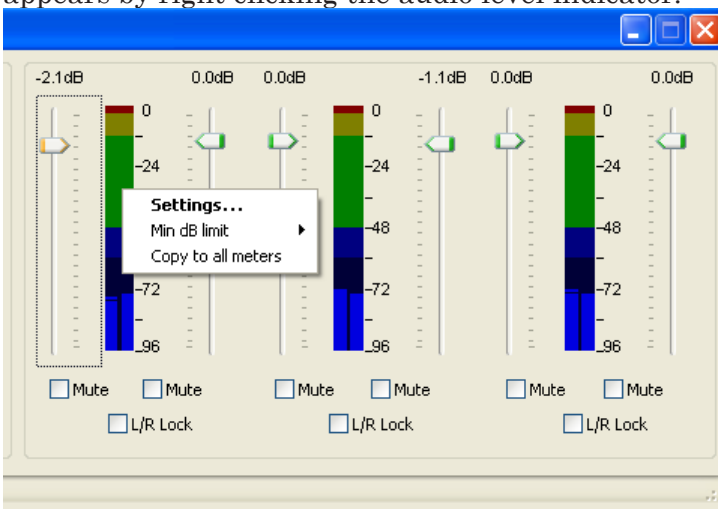
Elements for sound control are grouped into 3 groups (stereo channels). Every group contains the following elements:

- sliders for sound volume varying on corresponding FD300 board audio inputs (1 denotes left channel, 2 denotes right channel);
- indicators of sound level on the FD300 board input (3, 4);
- check boxes for muting corresponding FD300 board audio inputs (5, 6);
- check box for left and right audio inputs united in stereo channel (7).



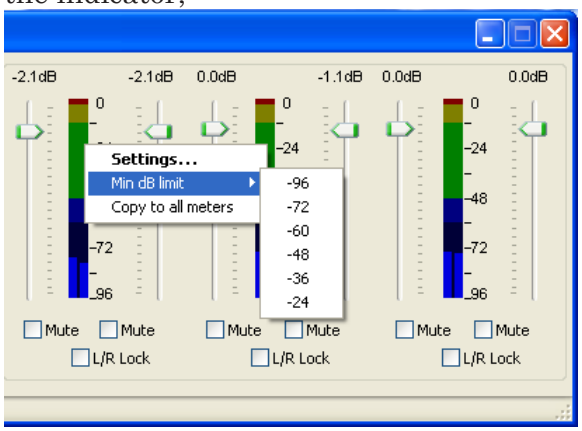
11.2. Context Menu of the Group to Control the Sound

The menu containing commands for indicator configuring appears by right clicking the audio level indicator.



The menu contains the following items:

- Settings ... – Audio Indicator Tuning window where indicator properties are configured;
- Min dB limit – cascading menu with range of values of the indicator;

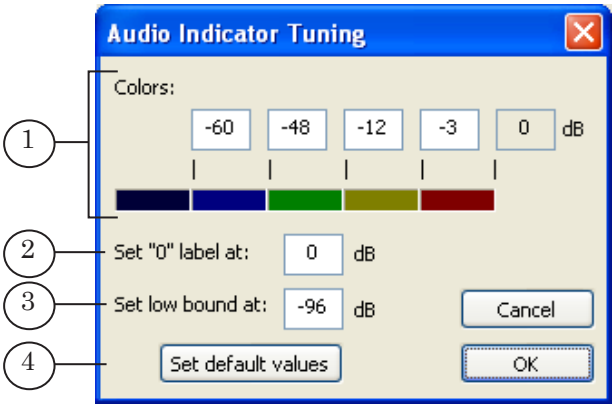


- Copy to All Meters sets properties for all indicators. These properties are the same as the specified indicator has.

11.3. Configuring of Audio Indicator Appearance

Complete the following steps to configure audio indicator appearance:

1. Left-click the indicator area in the main program window.
2. Make the following actions in the Audio Indicator Tuning window:

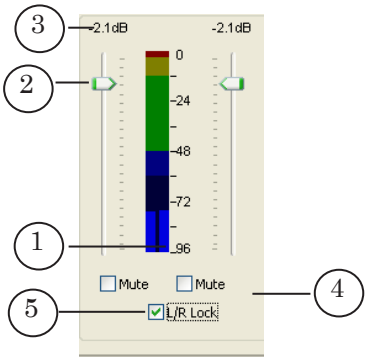


- set bound values of audio level in the Colors (1) text box. Every number sets the upper bound of value range. Every range has its specific color;
- specify audio level in the Set "0" Label At (2) text box. Specified level on the indicator should correspond to maximum audio level);
- specify the value corresponding to the low indicator bound in the Set Low Bound At text box. This bound determines indicator range;
- click Set Defaults Values to restore default values.

3. Click OK to save all settings.

11.4. Regulating of Audio Level

The coloured indicator (1) displays volume of the sound of the corresponding FD300 board audio channel.



Volume can be changed by moving the slider (2).

Tip: Use either mouse scroll wheel or arrow keys to provide more exact slider positioning.

The value on which the level of input signal was changed (the difference between the new value and the previous one) is displayed in the area located above the level scale (3). Positive value denotes the rise of audio level; negative value (with «–» symbol) denotes its falling.

Check the Mute mark (4) on, which corresponds to the specified channel, to turn the sound off.

The L/R lock option (5) is dedicated to synchronize the control of left and right channels that is why:

- changing the volume of one channel automatically changes the level of the second one;
- turning the sound of one channel off automatically turns the sound of the second channel off.

Appendix

1. Launch of Several Program Instances

Only one program instance can be launched with one FD300 board.

There is also a possibility to configure several program instances posessing different settings and when it is necessary select the desired instance to launch.

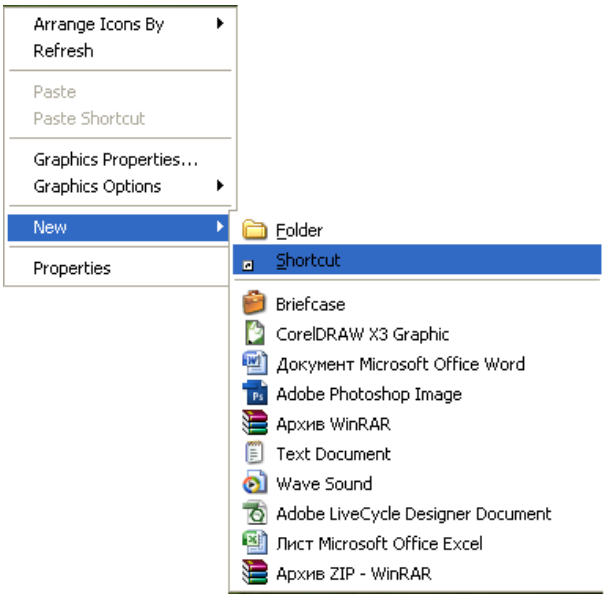
Every program instance will be opened with the settings configured during the last work session.

2. Creating the Shortcut to Launch Specified Program Instance

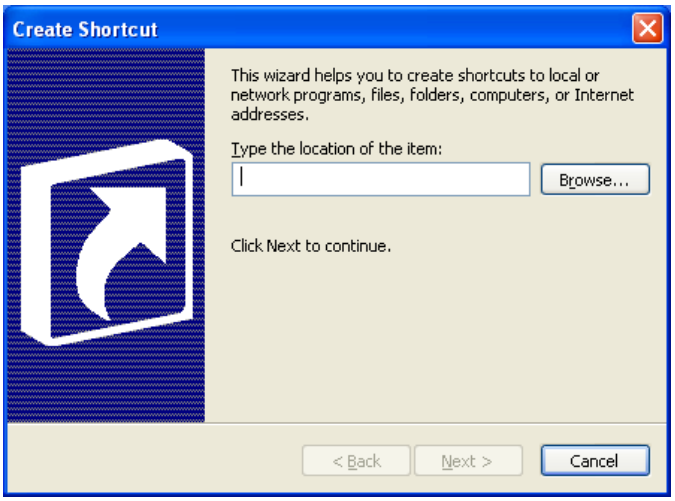
Create shortcuts to more convenient launch of different program instances.

Complete the following steps to create the shortcut:

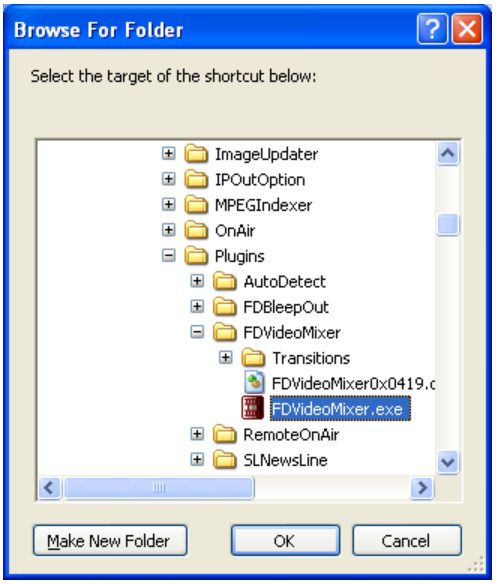
1. Right-click the folder or the desktop. Select New > Shortcut in the appeared menu.



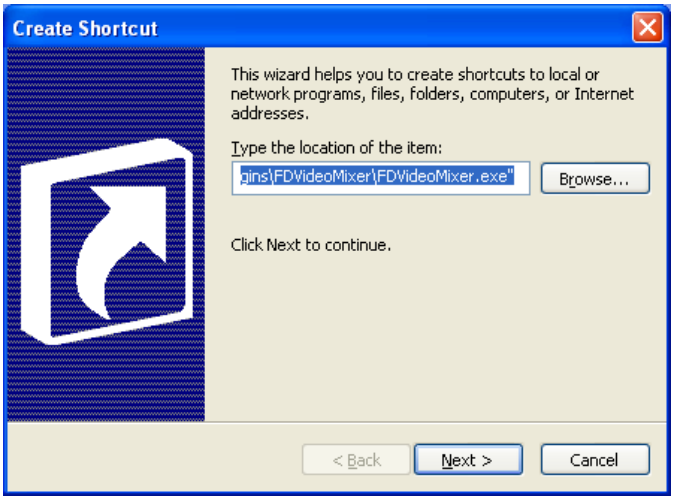
2. The Create Shortcut window appears.



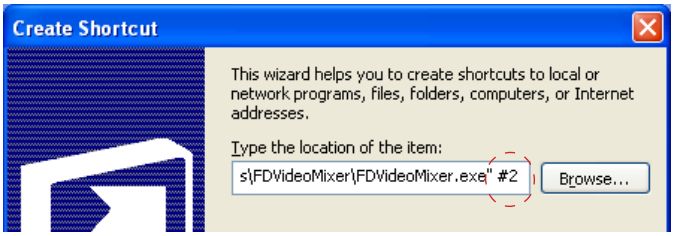
3. Click Browse and select the FDVideoMixer.exe file in the appeared window. The file is located by default in the C:\Program Files\ForwardT Software\Plugins\FDVideoMixer folder. Click OK.



4. A full path to the FDVideoMixer.exe file will be displayed in the text box in quotation marks.

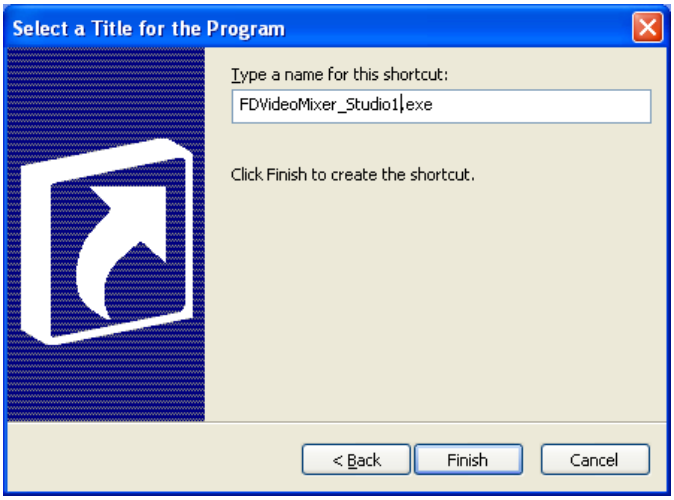


5. Put the space after the last quotation mark in the text box. Type the # symbol and the number of program instance, e.g. #2.



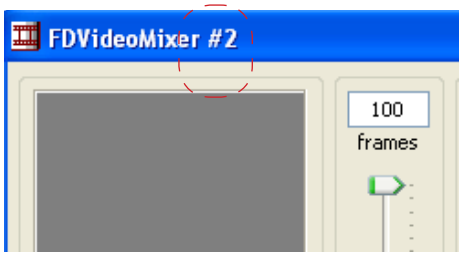
Then click Next.

6. Type the text to be displayed on the shortcut in the Select a Title for the Program window and click Finish.



7. The shortcut to launch specified program instance appears on the desktop.

The VideoMixer_Studio1 shortcut was created to launch the FDVideoMixer #2 program instance in our example.



Useful Links

ForwardT Software set: description, download, documentation, solutions

http://www.softlab-nsk.com/forward/index.html

Support

e-mail: forward@sl.iae.nsk.su

forward@softlab-nsk.com

forward@softlab.tv

Forum

http://www.softlab-nsk.com/forum (currently available in Russian only)

Translation from
20 September, 2010

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