

# FDO nAir Commands

Broadcast Automation



*Revision as of December 21, 2007.*

User's Guide



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## Introduction

The FDO nAir application is intended to automatically control television broadcast: prepare a schedule (playlist), execute broadcasting, control and correct the process of broadcasting. The application is a part of the system based on the FD300 board.

The available modes of the application operation:

- manual – performing interactive control of broadcasting;
- automatic – based on sequential execution of the schedule;
- combined – interactive controlling the schedule execution.

The application allows you to perform on-air broadcasting video and audio data coming from external signal sources (up to 6 video channels and 6 audio channels are supported) or from files located on the computer hard disk.

Besides, using the application you can combine different data streams on air including overlaying titles: logotypes (static or animated), crawl lines, clocks, and other elements of broadcast design.

The application can be used for round-the-clock broadcasting: retransmitting television signal (with a delay or directly), playing video, inserting commercials, overlaying logotypes, and so on.

This Guide contains a complete description of commands used in FDO nAir to control broadcasting. We discuss here their functions and formats, make examples. The commands are grouped by the types of the actions executed and data processed.



## FDOOnAir Commands Overview

### 1. Functions

Controlling broadcast in the FDOOnAir program is performed via commands. Each command is a directive to execute certain actions over data, e.g.: start playing a video file, load a title object, wait till the operator presses a required button, and so on.

Calling commands for execution is performed by the user with the buttons of interactive control or executed in the automatic mode in accordance with the schedule specified.

### 2. Types of Commands

By the types of executed actions, the commands are divided as follows:

- commands of playing data (video data, sound, titles);
- commands of controlling the order of executing the schedule;
- link commands for connecting with external devices and other programs.

### 3. Schedule

A schedule is an ordered list of commands, which can be presented in two variants:

- as a text file with the .air extension. The file can be edited with the standard processing means for text files;
- as a table. A schedule is displayed in this presentation in the FDOOnAir main window. Using the table you can create and edit a schedule, interactively control its execution and track the current state. When saving a table, the command lines are automatically converted to a text form written to a file with the .air extension.

### 4. Presentations of Commands. Structure and Forms

Each command is a combination of a keyword and parameters.

A keyword is the part of a command determining the executed action, e.g., playing a video file or holding a pause till a specified time.

Parameters are the variable part of a command. They are used to determine the conditions of executing a certain action over data, to define specific values of characteristics. For example, they are used to determine the duration of playing files, the name of a file with data.

Command lines can be presented in two forms:

- in alphanumeric characters – when working with a schedule in a text file. In this presentation, the key-



words and values of parameters are written with letters, digits, and special symbols;

- in alphanumeric and graphic characters – when working with a schedule table in the FDOOnAir main window. In this presentation, a key word has a certain graphic image – an icon.

## 5. Formats of Commands

The format of a command is a hard rule the command line must meet. A format unambiguously defines the key word of a command (the character line and icon), probable parameters, and their sequence.

A key word, as a rule, goes at the beginning of a line, then the values of the parameters are indicated. If a parameter is optional, its value may be absent.

When a user works with a schedule table in the FDOOnAir main window, the application automatically controls the observance of rules in spelling the commands and places the keywords and values of the parameters in the appropriate columns of the table.

When working with a schedule in the text presentation, the user must observe the rules of spelling the commands on their own – not to make errors when spelling keywords, put the values of the parameters in the appropriate order and format.

The next Sections of this Guide cover the FDOOnAir commands in detail, the format of each command being stated.



**Tip:** When studying the command language, use as a sample a schedule created in the schedule table of the FDOOnAir main window.

Make up a schedule using the buttons located on the editing panel and file pages. Save the ready schedule to a file then open it and view the file in a text editor.

## 6. Conventions

The following conventions are applied to the FDOOnAir commands:

- when spelling commands, the uppercase and lowercase letters are not discriminated between;
- the paths to files can be specified either as absolute or relative. If data files and the schedule are saved to the same directory, it's not required to specify the full paths.

When discussing the formats of commands in the next Sections, the keywords are in **bold**, the parameters being in *italics*.

## Parameters of Commands

Parameters are the variable part of a command used to set a specific data value.

In the text presentation of a schedule, the sequence of parameters depends on the format of a command. In the schedule table, each parameter is put in the appropriate column.

Below is shown a transcript of parameters used in the FDO nAir commands: the function, format, name of the column allotted for the command.

When discussing the formats of time presentation, the following designations are used:

- *hh:mm:ss.xx*, where *hh* denotes the hour(s) in military format, *mm* – the minute(s), *ss* – the second(s), *xx* – the centisecond(s) or frame(s) depending on the program settings;
- *ss.xx*, where *ss* denotes the seconds, *xx* – the centiseconds or frames depending on the program settings.

**Table 1.** Parameters of the FDO nAir commands

Designation	Format	Column	Function
<i>Time</i>	<i>hh:mm:ss.xx</i>	Start	Start time.
<i>Duration</i>	<i>hh:mm:ss.xx</i>	Length	The duration of playing data (displaying a video clip or its fragment, broadcasting the input video, audio signal, etc.). To set the zero value, the digit 0 is sufficient.
<i>(Duration)</i>	<i>(hh:mm:ss.xx)</i> <i>Round brackets required.</i>	Length	The duration of playing data. The round brackets mean the next command is to be executed concurrently with the current one not waiting till it ends. In the schedule table, a special icon (📌) put in the column marked 📌 means a concurrent execution of the commands.
<i>[FadeIn]</i>	<i>[ss.xx]</i> <i>Square brackets required.</i>		The duration of a cross-fade in the beginning of executing a command. An optional parameter.
<i>[FadeOut]</i>	<i>[ss.xx]</i> <i>Square brackets required.</i>		The duration of a cross-fade from the current command to the next. An optional parameter.



Designation	Format	Column	Function
<i>&lt;MarkIn&gt;</i>	<i>&lt;hh:mm:ss.xx&gt;</i> <i>Angle brackets required.</i>	none	The fragment start time relative to the whole clip start time. Used when necessary to play a fragment of a video or audio clip. Optional parameter. Displayed explicitly only in the text presentation.
<i>FileName</i>		Name	The full path to the data file. If data files and the schedule are saved to the same folder, you can specify relative paths to the files.
<i>FragmentName</i>	<i>Storage name\</i> <i>Clip name</i>	Name	The name of a PostPlay clip.
<i>{GUID}</i>	<i>{symbol string}</i> <i>Braces required.</i>	none	The GUID of a PostPlay clip. Automatically generated and assigned to a PostPlay clip when created. Example: {6F9619FF-8B86-D011-B42D-00-CF4FC964FF}. Displayed explicitly only in the text presentation.
<i>{ObjectName}</i>	<i>{symbol string}</i> <i>Braces required.</i>	Name	The title object name.
<i>Comment</i>	<i>wildcard designation</i>	Name	A comment. Using comments helps orientate oneself in the schedule.

## Commands Controlling the Order of Executing Actions

This Section covers commands intended to control the time and order of executing actions, namely:

- the wait event commands;
- the pause commands;
- the loop commands;
- the switch schedule commands.

### 1. Wait Event Commands

FDO nAir provides several commands intended to wait a certain event: a moment of time, a button pressing, the end time of another command execution.

If a command of the kind occurs in the schedule, the execution of the schedule is paused till the coming of the specified event. While waiting the event, the next in turn command is being prepared for the execution; when the event comes – the execution starts.

By the commands of the group, a schedule is split into blocks.

**Table 2.** Wait event commands

Name	Icon	Format	Comment
Wait operator		<b>wait operator 0</b> <i>Comment</i>	Wait for pressing the Start button.
Wait previous		<b>wait follow 0</b> <i>Comment</i>	Wait for the end of the previous command.
Passive wait		<b>wait time</b> <i>Time</i> [ <i>FadeOut</i> ] <i>Comment</i> <i>for example:</i> wait time 17:00:00.00 [5.00] News block	Wait for the moment of time <i>Time</i> to come. «Start executing the block not until the specified time». Triggers if the previous block ends before the required time: pauses executing the schedule till a specified time; at the specified moment of time transfers control to the next command. Note: the [ <i>FadeOut</i> ] parameter value is of no influence, but must be present in the command line.



Name	Icon	Format	Comment
Active wait		<b>wait time</b> <i>Time</i> [ <i>FadeOut</i> ] <b>active</b> <i>Comment</i> <i>for example:</i> wait time 7:00:00.00 [5.00] active Beginning of the morning program	Active wait for the moment of time <i>Time</i> to come. «Start executing the block no earlier no later than the specified time». If the specified moment has come, but the previous block is still being executed, being to end later, the execution of the block is to be interrupted, and the program proceeds to executing the command following the wait command. If the previous block ends before the specified time, the effect of the command is analogous to the effect of the passive wait command: the schedule execution is to be paused; the execution of the schedule next line starts at the specified moment of time. The command effect applies only to the adjacent blocks.

➡ **Example:** The schedule fragments in the examples are given in two presentations each: text and table.

1. If a line of the kind occurs in the schedule, its execution is to be paused until the operator presses the Start button:

wait operator 0 Wait for directions

	State	Start		Length				Name
		12:36:07.93						Wait for directions

2. The appearance of this command leads to a pause in the transmission till 18:00:

wait time 18:00:00.00 [5.00] Beginning of the afternoon program

	State	Start		Length				Name
		18:00:00.00		+5:22:12.38	5.00			Beginning of the afternoon program

## 2. Pause Commands

The commands are intended to pause the execution of the next in turn commands for a certain time.

**Table 3.** Pause commands

Name	Icon	Format	Comment
Wait all finished		<b>pauseAllFinish</b> <i>Duration</i> <i>for example:</i> pauseAllFinish 0:00:03.00	Wait for the end of all the commands being executed except the commands for displaying titles.  If a duration is set (the <i>Duration</i> parameter), the wait time is reduced; the next command starts earlier by the specified time.
Wait title object		<b>titleObjWait</b> { <i>ObjectName</i> } <i>Duration</i> <i>for example:</i> titleObjWait {TO_Logo} 0:00:02.00	Wait for the end of displaying a non-looped title object whereupon proceed to the execution of the next in turn command.  If a duration is set (the <i>Duration</i> parameter), the wait time is reduced by the specified time (the next in turn command starts earlier, before the end of displaying titles).
Pause		<b>pause</b> <i>Duration</i> <i>for example:</i> pause 0:00:01.00	Hold a pause of the specified duration.

## 3. Loop Commands

The loop commands are intended to set looped playing a sequence of commands.

**Table 4.** Loop commands

Name	Icon	Format	Comment
Repeat current block		<b>repeat block</b> <i>for example:</i> repeat block	Repeat a schedule fragment from the block beginning (i.e., from the nearest line with a wait event command) to the current command.  The exit from the loop is performed in the interactive manual mode – by a forced transfer to another block or by an active wait command opening the next block.



Name	Icon	Format	Comment
Repeat schedule		<b>repeat script</b> <i>for example:</i> repeat script	Repeat schedule from the beginning to the line with this command. The exit from the loop is performed the same way as for the previous command.

#### 4. Switch to Other Schedule Command

Two schedules can be open simultaneously in the FDO nAir application. Only one of them can be executed at the same time.

The application has the ability to switch the schedule being executed – to transfer control from one table to another. The Switch to other schedule command is used for this purpose.

**Table 5.** Switch to other schedule command

Name	Icon	Format	Comment
Switch to other schedule		<b>switch shedule</b> <i>for example:</i> switch shedule	Switch to the execution of the schedule opened in the other table.

## Data Playback Commands

### 1. Video Data Playback Commands

The commands of the group are used to broadcast video data.

The data source may be:

- the board video input;
- a video file (in the AVI, MPEG2, TML formats);
- a graphics file (in the TGA, JPG, BMP or other formats);
- a clip from a PostPlay storage.

The duration of broadcast is determined by the Duration parameter. If the duration of a cross-fade is specified, it's executed at the end of the playback.

**Table 6.** Video data playback commands

Name	Icon	Format	Comment
Video input n		<b>videoN</b> <i>Duration</i> [ <i>FadeOut</i> ] where <b>N</b> is a digit from 1 to 6 <i>for example:</i> video3 0:00:21.00 [0.10]	Broadcast video signal coming from video input n (the number can take on a value from 1 to 6). The assignment of numbers to the input lines is performed at the beginning of the work in the FDO nAir settings dialog box: Settings > Input settings.
Play video clip		<b>movie</b> <MarkIn> <i>Duration</i> [ <i>FadeOut</i> ] <i>FileName</i> <i>for example:</i> movie <0:03:01.60> 0:13:30.92 [0.12] D:\Movies\dolphinarium.avi	Play a video clip stored in the file with an assigned name (AVI, MPEG2, TML) or its fragment. The <MarkIn> parameter is optional. Used when necessary to play a video clip fragment. Denotes the start time of a fragment relative to the beginning of the whole clip. In case the specified duration (the <i>Duration</i> parameter) does not coincide with the real file duration, failing an indication to play the fragment (the <MarkIn> parameter), the real value required to play the whole clip is to be put when playing.
Play PostPlay clip		<b>rpmfragment</b> <i>Duration</i> [ <i>FadeOut</i> ] <i>FragmentName</i> {GUID} <i>for example:</i> rpmfragment 0:01:44.00 Storage_Game_1\Goal_1 {4BBF45EA-0334-4E68-A541-428F7884E2E0}	Play a PostPlay clip with a name assigned. The real duration and clip name are requested from the PostPlay server via GUID.

Name	Icon	Format	Comment
Default picture n	 	<b>defaultN</b> <i>Duration [FadeOut]</i> where <b>N</b> is digit 1 or 2 <i>for example:</i> default2 0:00:01.00 [0.10]	Display caption n (the number can take on value 1 or 2). The file names with the pictures for captions are set beforehand in the FDO n Air settings dialog box: Settings > Default pictures.
Display picture from file		<b>picture</b> <i>Duration [FadeOut]</i> <i>FileName</i> <i>for example:</i> picture 0:00:05.00 [0.12] D:\Users\UserR\Pictures\WINTER.TGA	Display a picture stored in a specified picture file.

➡ **Example:** The schedule fragments in the examples are given in the text and table presentations each.

1. The example discusses a schedule fragment for broadcasting video data in the order as follows:

#	Start time	Data
1	21:00:00.00	the block beginning – a caption from the file game_caption.tga
2	21:01:00.00	video clip basketball.avi
3	after the clip end	passthrough video from input #3

The schedule contains the following commands:

1. Wait time 21:00.
2. Display picture from file game\_caption.tga during 1 min.
3. Play video clip basketball.avi.
4. Video input 3 (Broadcast video coming from input line #3).

**movies\_block.air - Notepad**

File Edit Format View Help

① — wait time 21:00:00.00 [5.00] Afternoon program

② — picture 0:00:01.00 D:\Pictures\game\_caption.TGA

③ — movie 0:01:04.92 D:\Movies\Basketball.avi

④ — video3 0:10:00.00

	State	Start	Length	Name
①		21:00:00.00	+10:13:02.15 125	Afternoon program
②	READY	21:00:00.00	0:00:01.00	game_caption.TGA
③		21:00:01.00	0:01:04.23	Basketball.avi
④	READY	21:01:05.23	0:10:00.00	
		21:11:05.23	=0:11:05.23	*****

2. The example discusses a schedule fragment for broadcasting passthrough video with inserting PostPlay storage clips in the order as follows:

#	Start time	Data
1	22:00:00.00	the block beginning; display a caption from the file game_caption.tga during 1 sec
2	21:00:01.00	passthrough video from input #1
3	21:05:01.00	clip Storage_Game_1\Goal_1
4	after the clip is complete	caption #1 during 1 sec
5	further	clip Storage_Game_1\Goal_4
6	after the clip is complete	passthrough video from input #3

The schedule contains the following commands:

1. Wait time 22:00.
2. Display picture from file game\_caption.tga during 1 sec.
3. Video input 1 (Broadcast video coming from input line #1 during 5 min).
4. Play PostPlay clip Goal\_1 from Storage\_Game\_1 .
5. Default picture 1 during 1 sec.
6. Play PostPlay clip Goal\_4 from storage Storage\_Game\_1.
7. Video input 3 (Broadcast video coming from input line #3).

```

clip_tr.air - Notepad
File Edit Format View Help
1  wait time 22:00:00.00 [5.00] Live broadcast
2  picture 0:00:01.00 D:\Pictures\game_caption.TGA
3  video1 0:05:00.00
4  rpmfragment 0:01:44.00 Storage_Game_1\Goal_1 {4BBF45EA-0334-4E68-A541-428F7884E2E0}
5  default1 0:00:01.00
6  rpmfragment 0:00:36.56 Storage_Game_1\Goal_4 {017F7ACA-BE06-4F9A-AB5C-4AFFEEEE15A5}
7  video3 0:00:10.00 [0.10]
  
```

	State	Start	Length		Name
1	READY	22:00:00.00	+8:31:53.05	125	Live broadcast
2	READY	22:00:00.00	0:00:01.00		game_caption.TGA
3	READY	22:00:01.00	0:05:00.00		video1
4	READY	22:05:01.00	0:01:44.00		Storage_Game_1\Goal_1
5	READY	22:06:45.00	0:00:01.00		default1
6	READY	22:06:46.00	0:00:36.14		Storage_Game_1\Goal_4
7	READY	22:07:22.11	0:00:10.00	3	video3
		22:07:32.11	=0:07:32.11		*****

## 2. Commands for Working with Audio

The commands are intended to control broadcasting audio data. The data may come:

- from an audio file (in the WAV, TML formats);
- from an auxiliary audio input of the computer.

The duration of broadcast is determined by the Duration parameter. If the duration of a cross-fade is specified, it's executed at the end of the playback. For the Play audio clip command, the Duration parameter determines the duration of playing the file. For the other commands of the group – the time space to be held to transfer to the next command of the schedule.

**Table 7.** Commands for working with audio

Name	Icon	Format	Comment
Play audio clip		<b>sound</b> <i>&lt;MarkIn&gt; Duration FileName</i> <i>for example:</i> sound 0:05:25.22 D:\Users\UserR\ Sound\music_1.wav	Broadcast an audio file (WAV, TML) with a specified name or its fragment. The <i>&lt;MarkIn&gt;</i> parameter is optional. Used when necessary to play a file fragment. Denotes the start time of a fragment relative to the beginning of the whole clip. In case the specified duration (the <i>Duration</i> parameter) does not coincide with the real file duration, failing an indication to play the fragment (the <i>&lt;MarkIn&gt;</i> parameter), the real value required to play the whole clip is to be put when playing.
Stop audio clip		<b>soundOff</b> <i>Duration</i> <i>for example:</i> soundOff 0	Stop playing the audio file.
Auxiliary audio On		<b>auxOn</b> <i>Duration</i> <i>for example:</i> auxOn 0:05:00.00	Switch on an auxiliary audio input.
Auxiliary audio Off		<b>auxOff</b> <i>Duration</i> <i>for example:</i> auxOff 0	Switch off the auxiliary audio input.

➔ **Example:** The example discusses a schedule created to broadcast data in the order as follows:

#	Start time	Data
1	20:00:00.00	video clip reel_2.avi, (the file contains a video portion only), overlapping sound from file music_1.wav on the clip.
2	further	video clip commercial_4_Utki.avi with accompanying sound from the board audio input.
3	after the clip is complete	caption #1

The schedule fragment is given below in the text and table presentations. It contains the following commands:

1. Wait time 20:00.
2. Play video clip reel\_2.avi; the next command is to be executed concurrently with the current one not waiting till it ends.
3. Play audio clip music\_1.wav.
4. Auxiliary audio On.
5. Play video clip commercial\_4\_Utki.avi.
6. Auxiliary audio Off.
7. Default picture 1.

```

ex_audio.air - Notepad
File Edit Format View Help
1 — wait time 20:00:00.00 [5.00] Afternoon program
2 — movie (0:01:04.92) [0.10] D:\Movies\reel_2.avi
3 — sound <0:00:00.00> 0:01:04.77 D:\Sound\music_1.wav
4 — auxon 0
5 — movie 0:00:32.04 [0.10] D:\Movies\commercial_4_Utki.avi
6 — auxoff 0
7 — default1 0:00:01.00 [0.10]
  
```

	State	Start	Length		Name
1	🕒	20:00:00.00	+1:27:53.06	125	Afternoon program
2	READY	20:00:00.00	(0:01:04.23)	3	reel_2.avi
3		20:00:00.00	[0:01:04.19]		music_1.wav
4		20:01:04.19			
5		20:01:04.19	0:00:32.01	3	commercial_4_Utki.avi
6		20:01:36.20			
7		20:01:36.20	0:00:01.00	3	1

The block of commands is to be started at 20:00. The video clip reel\_2.avi and audio clip music\_1.wav are to be broadcast concur-



rently (the duration of the video file is set in round brackets, the icon  being present in the command line of the schedule). The audio file is to be played not in full, but just in part. The duration of the fragment is set the way the playback of both the files is to be ended simultaneously.

On ending the concurrent broadcast of the files, at 20:01:04.19, the board auxiliary audio input is to be switched on, broadcasting the video data from the file `commercial_4_Utki.avi` being started.

Broadcasting the board auxiliary audio input signal is to be stopped simultaneously with the video file end. After that, caption #1 is to be switched on.

## Commands Controlling Full-Screen Titles

The commands of the group are used to display «old» titles. As a rule, these are full-screen images with transparency.

The commands allow displaying:

- graphics files (in the TGA, BMP, DIB, JPG, PNG formats);
- video files (in the AVI, TML format);
- files with a full-screen crawl line (in the SPT format).

The Duration parameter value sets the time space until transfer to the next command of the schedule.

If the duration of a cross-fade is specified, it's executed at the beginning of the playback.

**Table 8.** Commands controlling full-screen titles

Name	Icon	Format	Comment
Picture with Alpha		<b>titlePicture</b> <i>Duration [FadeIn]</i> <i>FileName</i> <i>for example:</i> titlePicture 0:00:01.00 [0.10] D:\Pict_alf\Picture.tga	Display a static image from the specified file (TGA, BMP, DIB, JPG, PNG).
Movie with Alpha		<b>titleMovie</b> <i>Duration [FadeIn]</i> <i>FileName</i> <i>for example:</i> titleMovie 0:00:02.96 [0.10] D:\Users\UserRM_alf\tor.avi	Play a clip stored in the specified file (AVI, TML). If the specified duration (the <i>Duration</i> parameter) does not coincide with the real file duration, the real value required to play the whole clip is to be put when playing.
Title script		<b>titleScript</b> <i>Duration [FadeIn]</i> <i>FileName</i> <i>for example:</i> titleScript 0:00:28.15 [0.10] D:\SPT\RollSPT.spt	Play a full-screen crawl line file (SPT). If the specified duration (the <i>Duration</i> parameter) does not coincide with the real file duration, the real value required to play the whole clip is to be put when playing.
Clear fullscreen title		<b>titleOff</b> <i>Duration [FadeOut]</i> <i>for example:</i> titleOff 0:00:01.00 [0.10]	Switch off displaying full-screen titles. The fade-out duration implies gradual blanking of titles during the specified time.

 **Example:** The example discusses a schedule intended to display titles against the background of a video film.

The film is stored in the file `dolphinarium.avi`. The titles (a static image and an animated clip) are stored in the files with transparency: `logo.tga` and `054-10.avi`.

The schedule fragment shown in the text and table presentations consists of the following commands:

1. Wait time 15:00.
2. Play video clip `dolphinarium.avi` and execute the next commands concurrently.
3. Picture with Alpha from the file `logo.tga` during 7 sec.
4. Movie with Alpha `054-10.avi` during 45 sec.
5. Clear full-screen title.
6. Wait all finished.
7. Video input 1.

```

ex_old_title.air - Notepad
File Edit Format View Help
1 — wait time 15:00:00.00 [5.00]
2 — movie (0:20:24.80) [0.10] D:\Movies\dolphinarium.avi
3 — titlePicture 0:00:07.00 [0.10] D:\Pict_alf\Logo.tga
4 — titleMovie 0:00:45.00 [0.10] D:\Mov_alf\054-10.avi
5 — titleoff 0:00:01.00 [0.10]
6 — pauseAllFinish
7 — video1 0:00:01.00 [0.10]
  
```

	State	Start	Length		Name
1		15:00:00.00	+2:03:06.13	125	
2	READY	15:00:00.00	(0:20:24.20)	3	dolphinarium.avi
3	READY	15:00:00.00	0:00:07.00	3	Logo.tga
4		15:00:07.00	0:00:45.00	3	054-10.avi
5	READY	15:00:52.00	0:00:01.00	3	
6		15:00:53.00	0:19:31.20		
7	READY	15:20:24.20	0:00:01.00	3	

The block of commands is to be started at 15:00 with broadcasting the film `dolphinarium.avi`. Since the duration of the film playback is parenthesized, the execution of the next in turn command is to be started at the same time.

Commands going next are to be executed one after another till the line Wait all finished. First goes displaying picture with alpha from the file `logo.tga`, then (in 7 sec) – playing video clip with titles (movie with alpha) `054-10.avi`, after that (in 45 sec) – switching off (clearing) the full-screen titles.

The total time of displaying titles is 52 sec. In the remaining time, only the video film `dolphinarium.avi` is to be broadcast.



---

The Clear fullscreen title command is necessary to remove the last frame of the clip 054-10.avi from the screen.

When the broadcast of the film is complete (at 15:20:24.20), the passthrough video from the board input 1 is to be switched on.



## Commands for Working with Title Objects

The commands of the group are intended to work with «new» titles – title objects. The group includes:

- commands controlling title objects;
- commands to control displaying titles on screen.

### 1. Preparation for Working with Title Objects

Title objects are created in the FDTitleDesigner program and stored in a title project. Each object has a unique name.

To work with title objects in FDonAir, previously load a project containing them. For that, use a special tab of the application settings: Settings > Title objects.

Use the same tab to allocate the control buttons among the title objects and determine the “Logotype” title object.

- Note: There are 10 buttons for the interactive control of title objects in the FDonAir application main window:
- F9, F10, F11, F12, ^F9, ^F10, ^F11, ^F12 – to control specific title objects separately;
  - F7 – to control a group of title objects. The group contains all the objects assigned to buttons F9 – ^F12;
  - F8 – to control the title object determined as “Logotype” on the tab page.

To display titles on screen, there are 3 conditions to be met:

1. A nonempty task must be loaded into the title object.
2. The object is in the “On” state.
3. Displaying titles is enabled.

### 2. Commands Controlling Title Objects

The commands are used to control separate title objects. Using them it’s possible to change the current state of a specific object with a name assigned: load a new task, activate the object, and so on.

The Duration parameter value sets the time space until transfer to the next command of the schedule.

If the duration of a cross-fade (FadeIn, FadeOut) is specified, it’s executed at the playback beginning and end respectively.



**Table 9.** Commands controlling title objects

Name	Icon	Format	Comment
Load title object		<b>titleObjLoad</b> {ObjectName} <i>Duration [FadeIn] FileName</i> <i>for example:</i> titleObjLoad {TitleObject_1} 0:00:05.20 D:\Spt\HappyNew.spt	Load a specified task file into the title object with an assigned name.  The status of a looped object is not changed. A non-looped object is transferred to the “On” status.  The duration of displaying titles is determined by the <i>Duration</i> parameter. If the specified duration does not coincide with the real file duration, the real value required to play the whole title object task is to be put when playing.  For a looped object, the playback duration value becomes zero automatically.
Title object On		<b>titleObjOn</b> {ObjectName} <i>Duration [FadeIn]</i> <i>for example:</i> titleObjOn {TO_h1} 0:00:45.00 [0.10]	Switch on the title object with a specified name.
Title object Off		<b>titleObjOff</b> {ObjectName} <i>Duration [FadeOut]</i> <i>for example:</i> titleObjOff {TitleObject} 0:00:01.00 [0.10]	Switch off the title object with a specified name.  The object is to be switched off after the current point of the task execution is over (e.g., the current commercial in the crawl line or current clip in the block of commercials).  The information of the current point being saved, when the object is switched on next time, the task is to be played from the next point.
Title object Abort		<b>titleObjAbort</b> {ObjectName} <i>Duration [FadeOut]</i> <i>for example:</i> titleObjAbort {TO_fun} 0:00:03.00 [0.10]	Switch off the title object with the specified name immediately.  The information of the current task point is not saved.

Name	Icon	Format	Comment
Wait title object		<b>titleObjWait</b> {ObjectName} <i>Duration</i> for example: titleObjWait {TO_h1}	Wait for the end of displaying a non-looped title object, then transfer to the execution of the next command.  If a duration is set (the <i>Duration</i> parameter), the wait time is reduced by the specified time (the next in turn command starts earlier, before the end of displaying titles).

### 3. Commands to control displaying titles

The commands of the group are used to control displaying broadcast design elements. Using them you can start or stop playing title objects concurrently with broadcasting other data.

There are commands to control displaying:

- “Logotype”, i.e. a title object assigned to button F8 when loading the title project;
- title objects, assigned to buttons F9 – ^F12 (all together).

Special columns are allocated to the commands in the schedule table.

**Table 10.** Commands to control displaying titles

Name	Icon	Format	Comment
Logotype On		<b>LogoOn</b>	Switch on displaying “logotype” (title object assigned to button F8) concurrently with executing the current task..
Logotype Off		<b>LogoOff</b>	Switch off displaying “logotype” (title object assigned to button F8).
Titling On		<b>TitlingOn</b>	Switch on displaying titles (title objects assigned to buttons F9 – ^F12) concurrently with executing the current task.
Titling Off		<b>TitlingOff</b>	Switch off displaying titles (title objects assigned to buttons F9 – ^F12).

## Commands for Interaction with Programs and Devices

The commands of the group are intended to organize interaction of the FDO nAir program with other programs or external devices using:

- special commands;
- GPI signals.

### 1. Control Message Exchange Commands

The commands can be used to send special commands to other applications or instances of FDO nAir.

Adjusting the commands which are to be sent is performed on the Custom commands files page of the FDO nAir main window.

**Table 11.** Control message exchange commands

Name	Icon	Format	Comment
Send command		<b>shout</b> <i>Some command string</i> where: <i>Some command string</i> is a special command, e.g.: Shedule.Start	Send a control message. The message is broadcast to all applications set to receive the messages.
Wait response		<b>waitshout</b> <i>Some command string</i> where: <i>Some command string</i> is a special command	Send a control message and wait for response. The message is broadcast to all applications set to receive the messages of the kind. Further execution of the schedule is paused till response receipt.
Send message		<b>messageshout</b> <i>Name</i> <i>Machine.Queue</i> <b>Subject</b> <i>Command</i> where: <i>Name</i> is a name of the command; <i>Machine.Queue</i> the name of the commands queue; <i>Command</i> the control file name	Send a command in a special command queue with a specified name. The command queue can be created via the Forward SDK package.

Using the commands of the group is discussed in detail in the Forward SDK package user's guide.



## 2. Interaction Commands Based on the GPI Interface

The commands are used to exchange control signals with devices and other programs via GPI interface.

Before using, assign the actions which are to be performed when receiving a certain GPI signal. For that, use the FDO nAir dialog box Settings > GPI.

GPI signals used when automatically recognizing jingles are adjusted in a special GPI configuration manager.

**Table 12.** Interaction commands via GPI signals

Name	Icon	Format	Comment
Send signal		<b>gpishout</b> <i>GPI</i> Num { <i>GPI_ID</i> } : <i>Name</i> where: <i>Num</i> is the signal number, for example: <i>GPI8</i> ; { <i>GPI_ID</i> } is the signal identifier, for example: { <i>GPI_On_COM1_0_Output</i> }; : is a required separator; <i>Name</i> is the command name explaining its function.	Send a GPI signal with a specified identifier.
Wait signal		<b>gpiwaitshout</b> <i>GPI</i> Num { <i>GPI_ID</i> } : <i>Name</i> where: <i>Num</i> is the signal number, for example: <i>GPI37</i> ; { <i>GPI_ID</i> } is the signal identifier, for example: { <i>GPI_On_COM1_0_Input</i> } or { <i>DTMFTrigger_1</i> }; : is a required separator; <i>Name</i> is the command name explaining its function.	Wait for a GPI signal with a specified identifier and execute the assigned action when received.

 **Example:** The example discusses using interaction commands for inserting a block of commercials by a jingle. The Wait signal command can be used for this purpose. Two commands of the type are used in the example: one is intended to wait for the beginning of a block of commercials; the other one – to wait for a signal of the commercial end. The Figure shows a schedule fragment in the text and table presentations. The fragment contains the following commands:

1. Wait operator.
2. Video input 1.
3. Wait signal with the identifier WAV\_Comm\_Block.

4. Several commands Play video clip.
5. Display picture from file Winter.TGA.
6. Wait signal with the identifier WAV\_Comm\_Block\_End.
7. Video input 1.
8. Active wait time 17:00.

```

20July_comm2.air - Notepad
File Edit Format View Help
1 wait operator 0 * * * * *
2 video1 0:15:00.00 [0.10]
3 gpiwaitshout GPI63 {WAV_Comm_Block} : start commercial broadcast
4 movie 0:00:10.56 [0.10] D:\Movies\commercial_1.avi
   movie 0:00:16.08 [0.10] D:\Movies\commercial_2.avi
   movie 0:00:35.80 [0.10] D:\Movies\commercial_gorod1.avi
   movie 0:00:09.52 [0.10] D:\Movies\commercial_5.avi
   movie 0:00:16.08 [0.10] D:\Movies\commercial_2.avi
5 picture 0:00:00.12 [0.10] D:\Users\UserR\Pictures\WINTER.TGA
6 gpiwaitshout GPI64 {WAV_Comm_Block_End} : stop commercial broadcast
7 video1 0:00:01.00 [0.10]
8 wait time 17:00:00.00 [5.00] active
  
```

	State	Start	Length		Name
1	READY	16:31:16.21	0:15:00.00	3	*****
2	READY	16:46:16.21			GPI63: Start commercial broadcast
3	READY	16:46:16.21	0:00:10.14	3	commercial_1.avi
		16:46:27.07	0:00:16.02	3	commercial_2.avi
4		16:46:43.07	0:00:35.20	3	commercial_gorod1.avi
		16:47:18.24	0:00:09.13	3	commercial_5.avi
		16:47:28.10	0:00:16.02	3	commercial_2.avi
5		16:47:44.09	0:00:00.03	3	WINTER.TGA
6		16:47:44.12			GPI64: Stop commercial broadcast
7		16:47:44.12	0:00:01.00	3	
		16:47:45.12	=0:16:28.16		+0:12:14.13
8		17:00:00.00	+0:28:43.04	125	

The schedule works as follows.

When the operator presses the Start button, video coming to the board input 1 is started being broadcast.

Broadcasting is to go on until the beginning jingle of the block of commercials is recognized. When that occurs, FDO nAir receives a notice – GPI signal {WAV\_Comm\_Block}.

The passthrough video is to be stopped, and displaying the commercials is started.

After the block of commercials, displaying the caption (a picture from the file Winter.tga) is to be switched on. The caption is broadcast until the end jingle of the block of commercials occurs on the input.



---

Then a GPI signal {WAV\_Comm\_Block\_End} triggers, and control is to be transferred to the next command – broadcasting video from the board input 1 is started again.

## Buttons for Inserting Commands into the Schedule

To insert command lines into the schedule, use special buttons of the application main window. Some of the buttons are located on the editing panel on the right of the schedule table. Others – on the corresponding files pages.

**Table 13.** Commands that are to be added from the editing panel

Command name	Button
Wait event commands	
Wait operator	
Wait time: <ul style="list-style-type: none"> <li>• Passive wait;</li> <li>• Active wait.</li> </ul>	 <p>To switch to the required variant of the command, click the icon in the schedule table.</p>
Wait previous	
Pause commands	
Pause	
Wait all finished	
Loop commands	
Repeat current block	
Repeat schedule	
Switch to other schedule command	
Switch to other schedule	
Video data play back commands	
Video input 1	
Video input 2	
Video input 3	
Video input 4	
Video input 5	

Command name	Button
Video input 6	
Default picture 1	
Default picture 2	
Commands for working with audio	
Auxiliary audio On	
Auxiliary audio Off	

**Table 14.** Commands that are to be added from the files pages

Command name	Button or action	Page name	Button to move to a page
Video data playback commands			
Play PostPlay clip	Double click on the task file	PostPlay	
Display picture from file	<i>ditto</i>	Pictures	
Play video clip	<i>ditto</i>	Movies	
Commands for working with audio			
Play audio clip	Double click on the task file	Sound files	
Stop audio clip		<i>ibidem</i>	
Commands controlling full-screen titles			
Picture with Alpha	Double click on the task file	Pictures with Alpha	
Movie with Alpha	<i>ditto</i>	Movies with Alpha	
Title script	<i>ditto</i>	Title scripts	

Command name	Button or action	Page name	Button to move to a page
Clear fullscreen title		Pictures with Alpha; Movies with Alpha; Title scripts	  
Commands controlling title objects			
Load title object	Double click on the task file	Title objects	
Title object On		<i>ibidem</i>	
Title object Off		<i>ibidem</i>	
Title object Abort		<i>ibidem</i>	
Wait title object		<i>ibidem</i>	
Commands to control displaying titles			
Logotype On		Pictures; Movies	 
Logotype Off		<i>ibidem</i>	
Titling On		<i>ibidem</i>	
Titling Off		<i>ibidem</i>	
Commands for interaction with programs and devices			
Send command	Double click on the command line	Custom commands	
Wait response	<i>ditto</i>	<i>ibidem</i>	
Send message	<i>ditto</i>	<i>ibidem</i>	
Send signal	<i>ditto</i>	<i>ibidem</i>	
Wait signal	<i>ditto</i>	<i>ibidem</i>	



## Useful Links

<http://www.softlab-nsk.com/forward/docs.html>