Cinegy Playout 26.2 Manual

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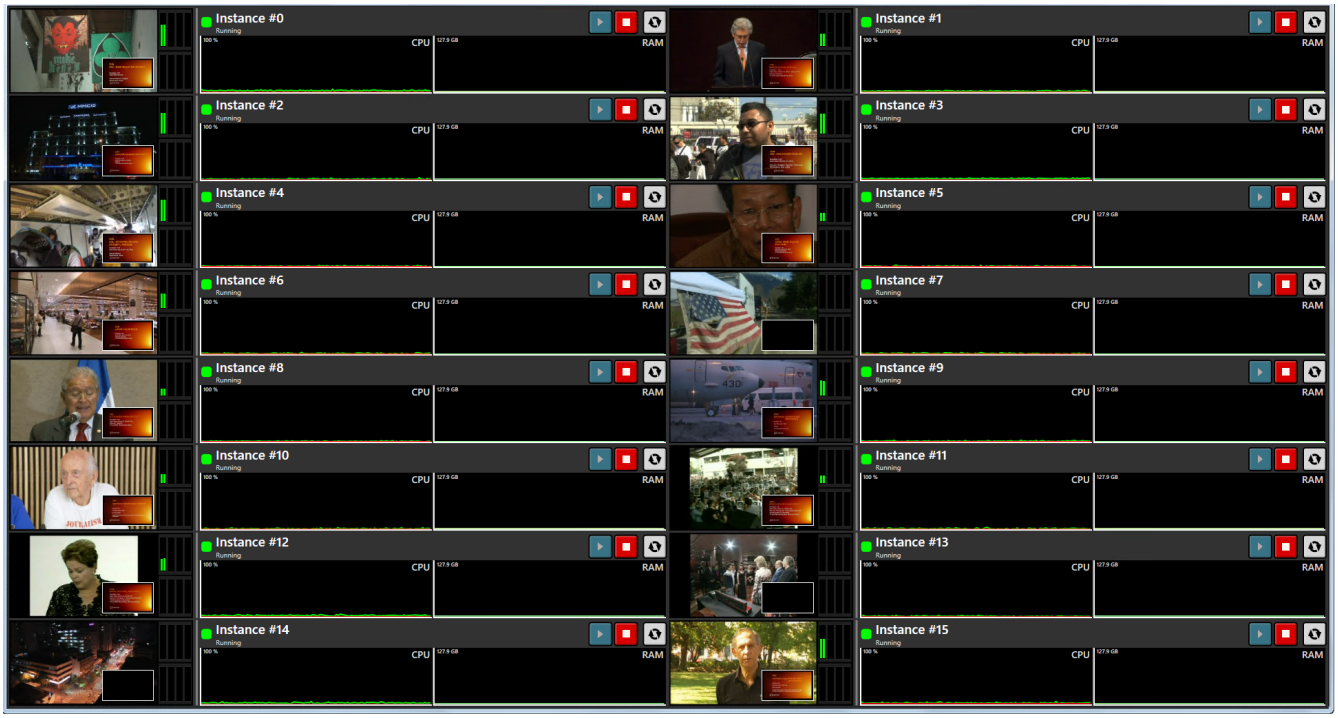
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Cinegy Playout, which is a part of the Cinegy Air installation package, is designed as a universal tool that performs final direct playout without rendering or export. This is a software-based system for SD and/or HD (4K, 8K) playout using standard PC server hardware.

Cinegy Playout is a unified component that allows controlling different applications – Cinegy Air PRO and Cinegy Studio PRO – without any need to restart or reconfigure. It eliminates the need to switch between different Playout modes.



User Manual

Chapter 1 Installation

1.1 Installation

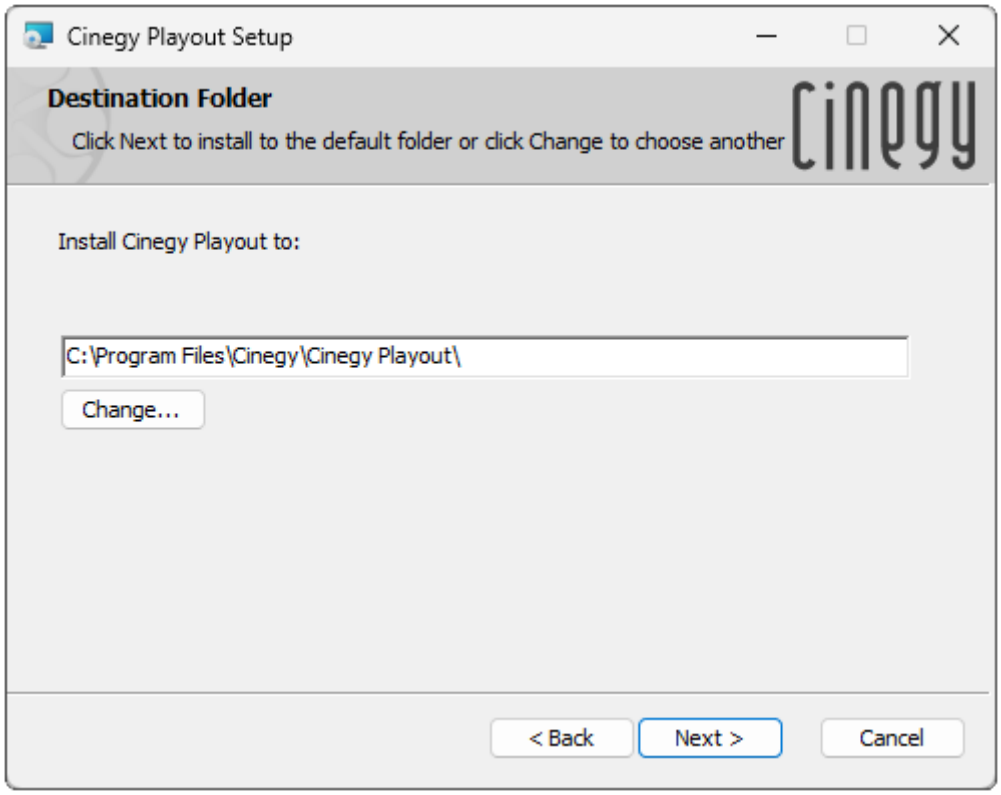
To install Cinegy Playout, run the Setup.exe file from the "Cinegy Playout" directory of your Cinegy Air installation package. The **Cinegy License Service** will be automatically installed.

The setup wizard will be started:



Press "Next", read and accept the license agreement and proceed with the installation.

Define the installation folder for the Cinegy Playout to be installed to:



Press the "Next" button to launch the installation process. The progress bar will show the progress.

Press the "Finish" button to exit the setup wizard.

A message will inform you that computer restart is required for the Cinegy Playout installation to take effect.

You can restart the computer immediately after the Cinegy Playout installation by pressing "Yes" or make any further changes and manually restart it later. After restart, the Cinegy Playout Dashboard icon will appear in the notification area of the taskbar.

Multi-Instance Playout Service

Multiple Cinegy Playout instances can be started on the same machine. By using the Cinegy Playout Configurator, you can add/remove Cinegy Playout instances and configure each one individually.

Every Cinegy Playout instance requires a dedicated license. Please refer to the **Licensing** article for details.

1.2 Automatic Logon

In order to automatically launch Cinegy Playout after the PC restart, you need to set up the automatic logon into the operating system.

To enable automatic log on under the specified domain user name, please follow these steps to edit the Windows registry:

1. Go to "Start", click "Run" (or use the `Win+R` keyboard keys) and enter **regedit**, then click OK.
2. Navigate to the following registry key:

   HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Winlogon

3. Double-click the **DefaultUserName** entry, enter the user name to log on with and then click OK.

If this entry does not exist, create a new String Value (REG_SZ) with the "DefaultUserName" name.

4. Double-click the **DefaultPassword** entry, enter the password for the user account under the value data box and then click OK.

   If this entry does not exist, create a new String Value (REG_SZ) with the "DefaultPassword" name.

   > If no **DefaultPassword** string is specified, Windows automatically changes the value of the **AutoAdminLogon** registry key from 1 (true) to 0 (false) to turn off the AutoAdminLogon feature.

5. **DefaultDomainName** has to be specified as well. To do this, double-click DefaultDomainName and enter the domain name of the user account.

   If this entry does not exist, create a new String Value (REG_SZ) with the "DefaultDomainName" name.

6. Double-click the **AutoAdminLogon** entry, enter 1 in the Value Data box and then click OK.

   If there is no **AutoAdminLogon** entry, create a new String Value (REG_SZ) with the "AutoAdminLogon" name.

7. If it exists, delete the **AutoLogonCount** key.
8. Close Registry Editor and restart the computer.

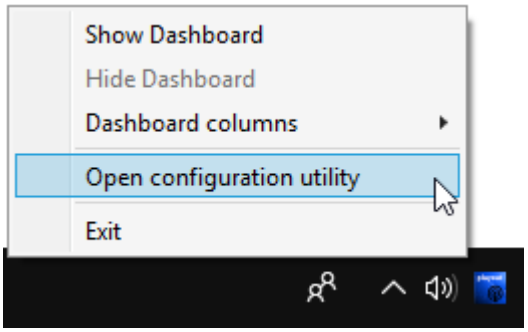
> For more information on configuring automatic logon in Windows OS, refer to the Microsoft documentation.

Chapter 2 Configuration

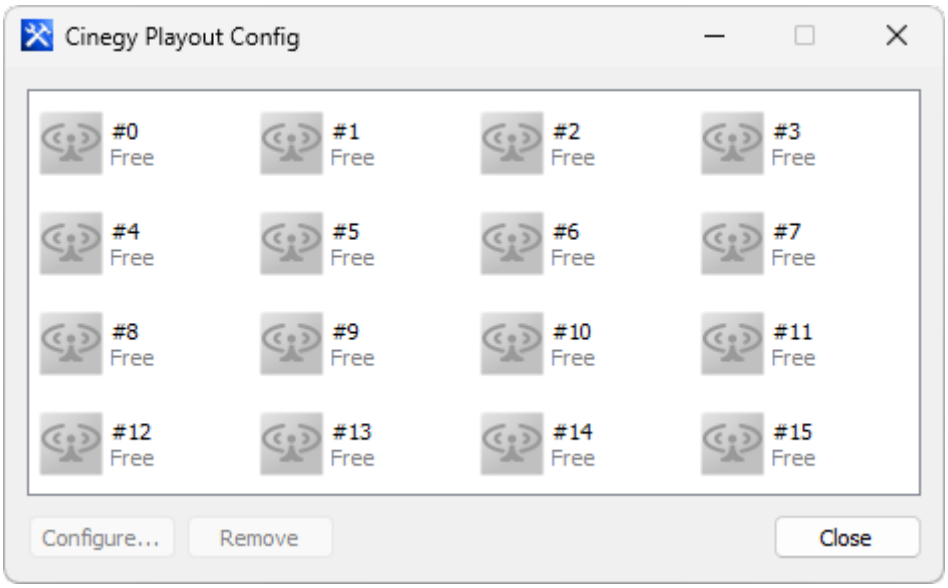
2.1 Launching the Configuration Tool

Cinegy Playout has the unified configuration procedure regardless of the applications it is controlled by.

To open the Cinegy Playout Configuration tool manually, right-click the icon in the taskbar and use the "Open configuration utility" command:



The configuration dialog looks as follows:



Alternatively, the Cinegy Playout Configuration utility can be launched from Start > All Programs > Cinegy > Cinegy Playout > Cinegy Playout Config.

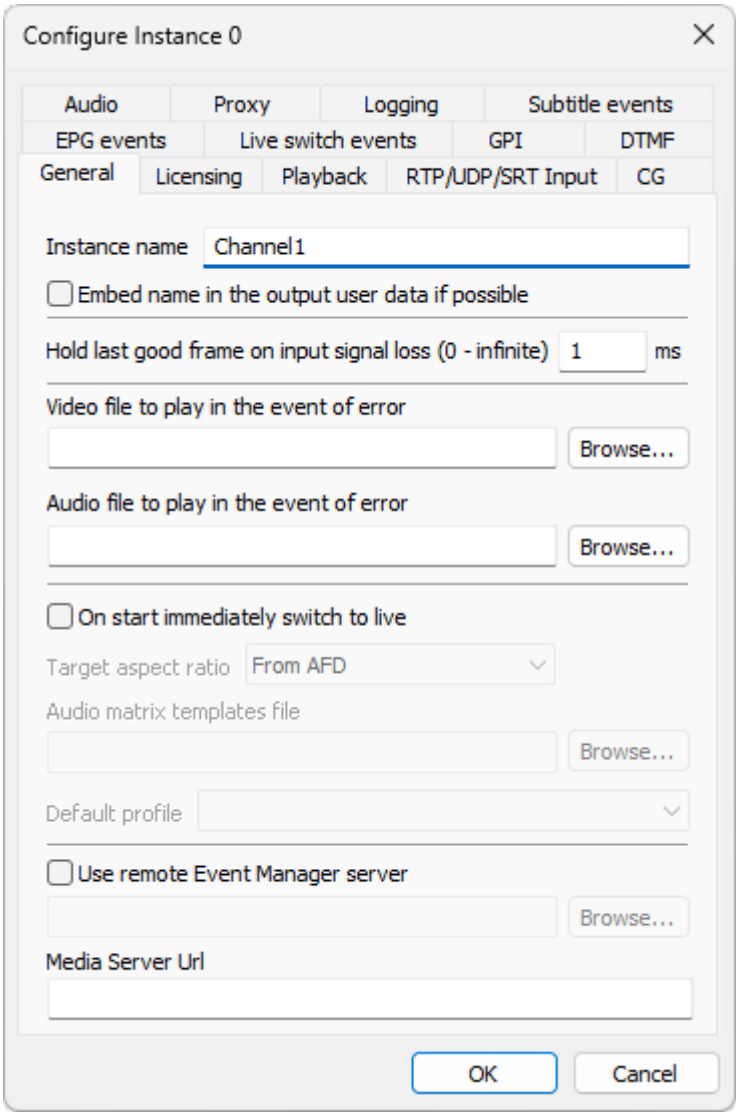
By default, no instance is configured. To configure an instance, select any "Free" one and configure it by pressing the "Configure…" button. The configuration dialog of that particular instance will appear. To remove the specified instance, select it and press the "Remove" button.

The "Remove" option is not available for running instances.

Refer to **Launching Playout** for details on how to operate the engine.

2.2 General Settings

The "General" tab allows the user to define the following settings:



- **Instance name** – enter the desired title to be used as the custom instance name.

  Select the "Embed name in the output user data if possible" for the custom instance name to be embedded into the as-run log file name as a prefix, as well as into the output RTP stream, letting other Cinegy applications, like Cinegy Multiviewer, decode and display this name. For details, please refer to the "Decode UMD info" option in the Cinegy Multiviewer Configurator.

- **Hold last good frame on input signal loss** – define the time in milliseconds to display the last frame available before live input video loss, after which the black frame will be displayed. If this parameter is set to 0 - the last frame available before live input video loss will be displayed.
- **Video file to play in the event of error** – this video file will automatically replace any playlist item that cannot be played or is unavailable and will be played in a loop until the next valid item is started. If unset, the Cinegy Playout engine will play color bars. No audio will be played until a dedicated audio file is defined (see below).
- **Audio file to play in the event of error** – this audio file will be automatically played in a loop on top of the replacement video file (see above).
- **On start immediately switch to live** – check the option to enable instant live playback directly on the engine start. In this mode, the Cinegy Playout engine works as Cinegy Encode.

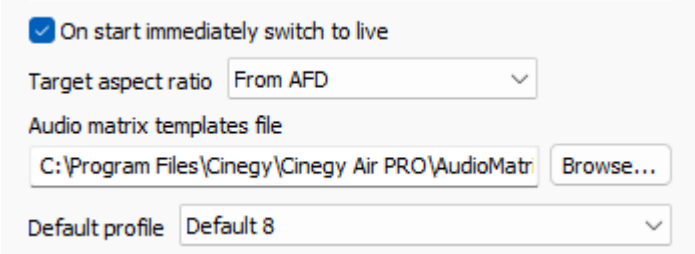
If this option is selected, it is possible to overlay the graphics objects over the live item.

It is not recommended to work in this mode if the Cinegy Playout engine is configured to work with control applications such as Cinegy Air or Cinegy Studio.



Refer to the **Live Switch Events** paragraph to get more information on graphics overlay implementation for live items.

- **Target aspect ratio** – choose between the available options to adjust the display of graphics objects over the live item. Select the "From AFD" option to keep the original aspect ratio of a default live item. If the "Squeeze" option is selected, the target video stream is adjusted to fill the entire frame.
- **Audio matrix templates file** – selecting the "On start immediately switch to live" option allows defining the audio matrix that will be used for audio mixing. Choose the audio matrix template file in the "Default profile" list:



- **Use remote Event Manager server** – select the checkbox and specify a remote server running Cinegy Event Manager to control the third-party baseband routers or other devices.



To get more information on secondary events, refer to the **Secondary Events** paragraph in the **Cinegy Air Manual**.

- **Media Server Url** – specifies the location of media storage server for Cinegy Air Cloud.

Preview Default Color Customization

When the Cinegy Playout engine starts, the feedback stream for control monitors is generated with a predefined blue color. The feedback color for the engine idle mode can be customized directly in the instance configuration file, which is located at:

C:\ProgramData\Cinegy\CinegyAir\Config\Instance-n.Config.xml,

where *n* is the Cinegy Playout instance number.

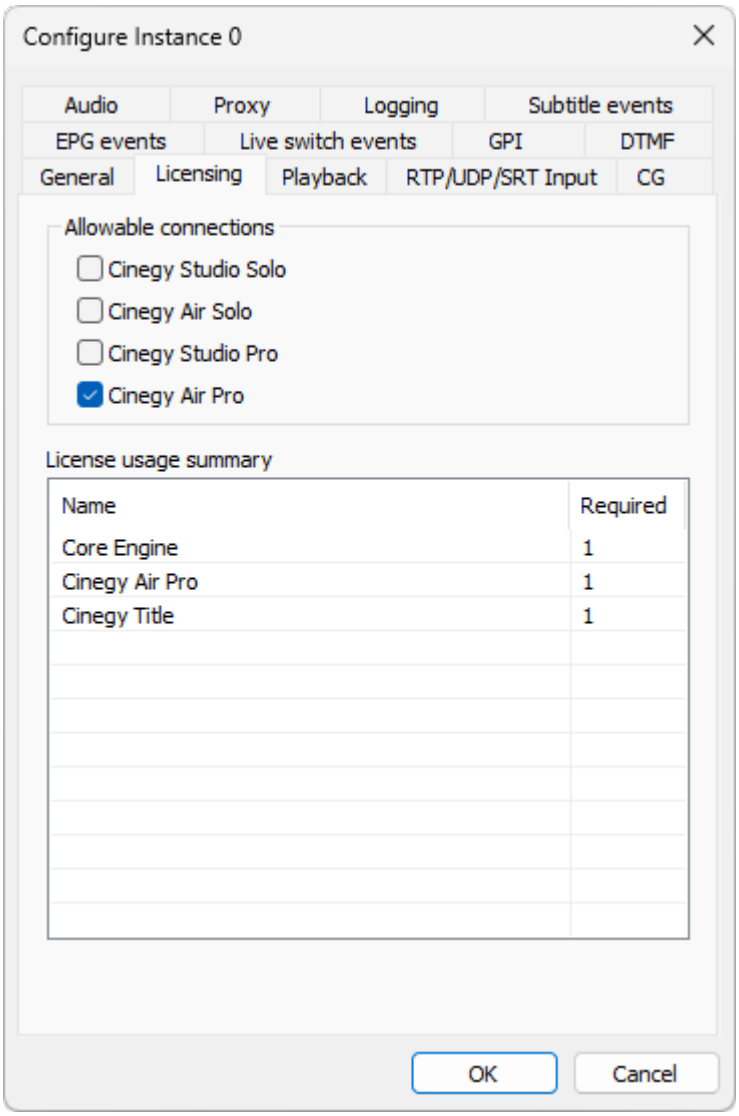
The following is a snippet of a configuration file representing the "General" settings group, which contains the corresponding color attribute:

```
<AirEngineConfig Version="5">
    <General InstanceName="Channel1" EmbedInstanceName="0" VideoBadFileName=""
AudioBadFileName=""
    ExternalCommandsServer="" MediaServerUrl="" IdleColor="#0000FF"
MinimumItemLen="500"
    MarkNewItemStart="0" ProcessCC="1" ProcessTeletext="1" HTTPOnLocalhostOnly="0"
InputHoldTime="1"
    ProcessOriginalPTS="1" AutoAudioFade="1" VideoAccelerator="Direct3D11/1"
QueueSize="60"
    FeedbackCodec="0" ProcessingMode="0" OutBlocks="3" FeedbackAudioCodec="4">
```

The parameter responsible for the color is `IdleColor="#0000FF"`. The color is specified with the hex color code.

2.3 Licensing

This tab lets you specify and see which licensing options this specific Cinegy Playout instance will acquire once it's started:



Allowable Connections

Please specify which control applications shall connect to this Cinegy Playout instance:

- **Cinegy Studio SOLO** – enables connection with Cinegy Studio SOLO.
- **Cinegy Air SOLO** – enables connection with Cinegy Air SOLO.
- **Cinegy Studio PRO** – enables connection with Cinegy Studio PRO and Cinegy Studio PRO Legacy.
- **Cinegy Air PRO** – enables connection with Cinegy Air PRO.

License Usage Summary

Multiple connection types can be selected, but only one control connection can be active simultaneously.

The license options are explained below:

Name	Description
Core Engine	Required to run the Cinegy Playout instance
Cinegy Studio Solo	Provides Cinegy Studio SOLO connectivity
Cinegy Air Solo	Provides Cinegy Air SOLO connectivity
Cinegy Studio Pro	Provides Cinegy Studio PRO connectivity
Cinegy Air Pro	Provides Cinegy Air PRO connectivity
Cinegy Title	Enables the Cinegy Title Channel Branding option, provides Cinegy Title and Cinegy Studio (Graphics devices) connectivity
Network Proxy Caching	Media caching (proxying) from network to a local drive
Multichannel I/O and Simulcast	Required if more than one output or/and format is configured; if more than one SDI input is configured for Playout engine, or one or more devices are configured as additional inputs for Cinegy Title.
Clean Engine Output	Enables using "Clean output" option to access a "clean" output from the Cinegy Air application
Fifty5Blue (Kantar) Watermarking	Enables embedding of Fifty5Blue (formely known as Kantar) audio watermarks.



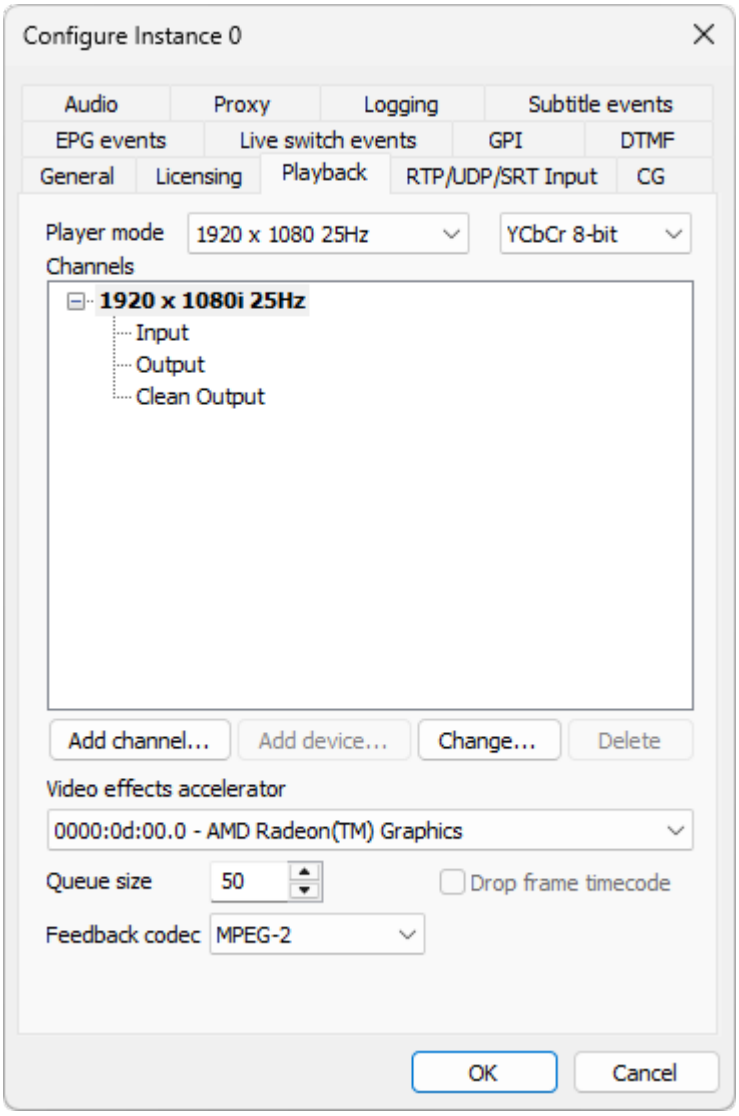
Please note that if the Core Engine license is not available the Cinegy Playout instance will not run at all. To enter demo mode a special demo license is required.



If any other licensing options are configured but missing, Cinegy Playout will fail to start and write down a corresponding message in the logs.

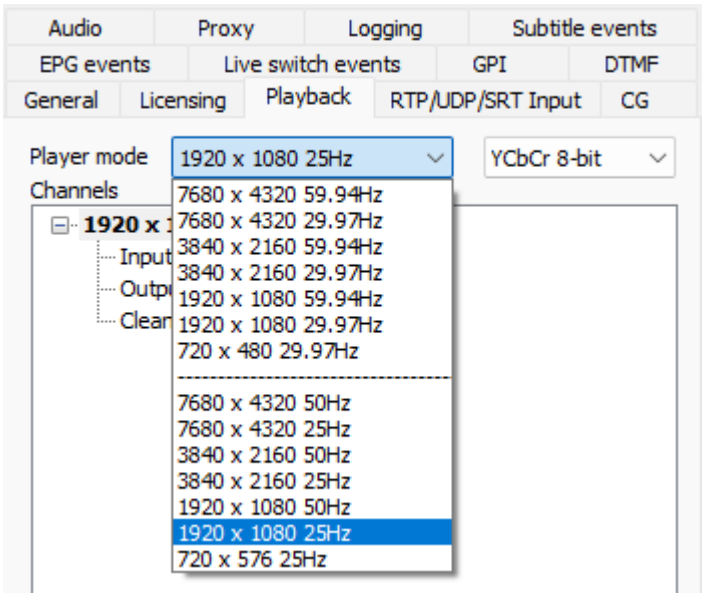
2.4 Playback Configuration

The "Playback" tab allows defining player mode, as well as configuring channels and devices:

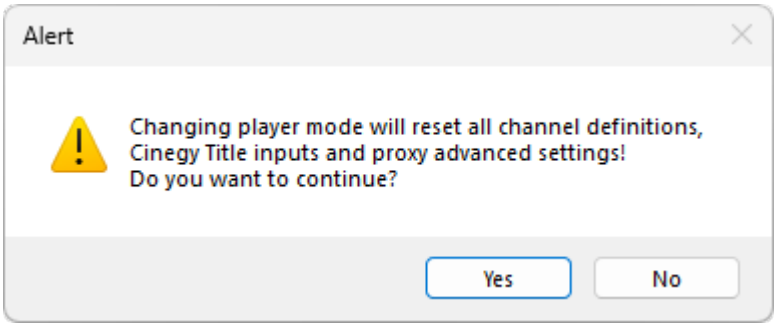


Player Mode

Use the "Player mode" drop-down list to define the basic TV format system used for the Cinegy Playout server broadcasting:

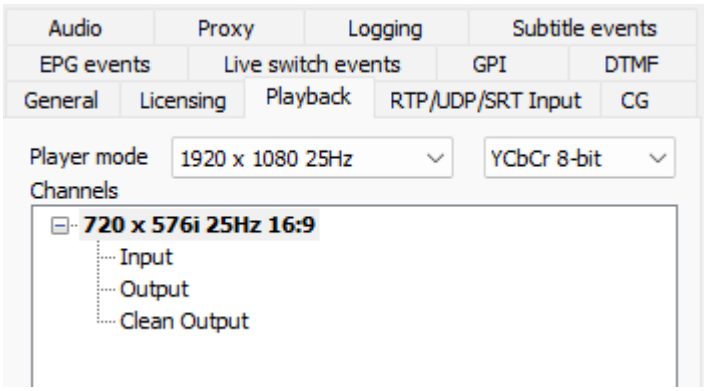


Changing player mode settings will reset the I/O and proxy settings to defaults:



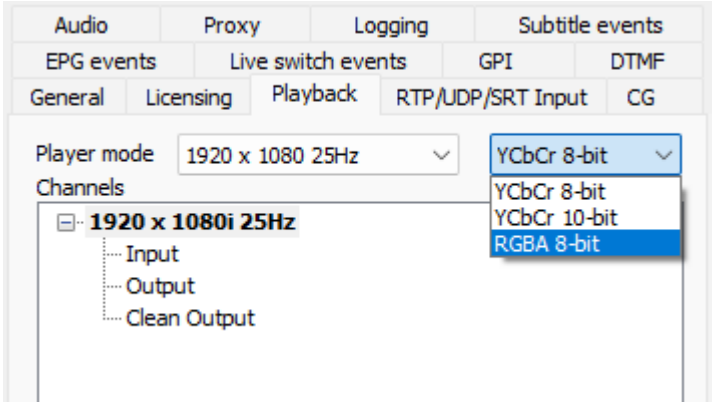
It is possible to add HD or UHD clips to SD playlists or UHD clips to HD playlists. For example, to be able to add 1920x1080i 25 Hz video files to the playlist of the 720x576i 25 Hz video format, do the following:

1. Choose the appropriate video system in the Cinegy Air Configurator.
2. Choose the "1920x1080 25Hz" option in the "Player mode" drop-down list.
3. Double-click a channel or press the "Change" button and choose the appropriate (720x576i 25Hz 16:9) channel video format in the dialog that appears. Pressing the "Finish" button will apply the changes:



Bit Depth

Use the drop-down list to select the required bit depth for stream processing among the options represented in the drop-down list:

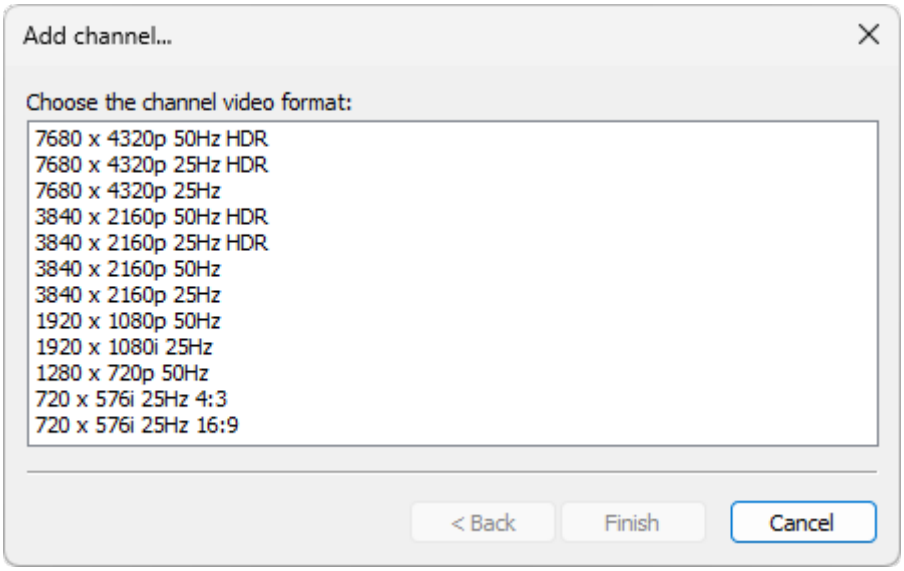


Selecting the "RGBA 8-bit" option from the drop-down list will set up the Key&Fill mode.

Channels

Multiple channels can be added to enable broadcasting of the same playlist to several channels of different TV formats simultaneously.

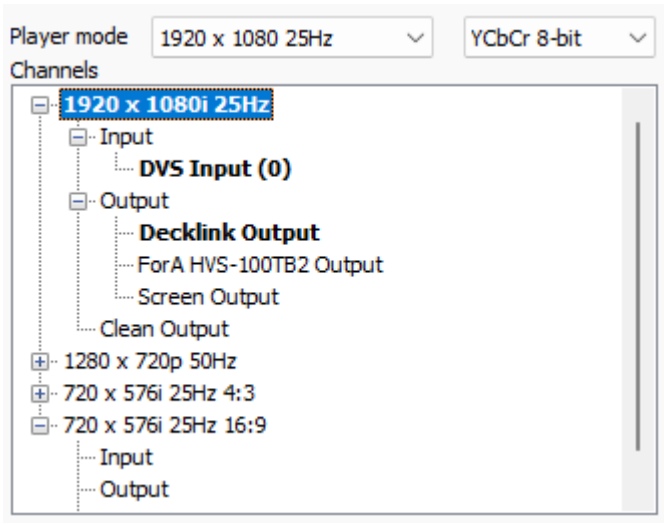
Add channel... To add another channel to the list of channels used for broadcasting, press the "Add channel…" button. The following dialog box appears:



The list of available TV formats may vary depending on chosen player mode.

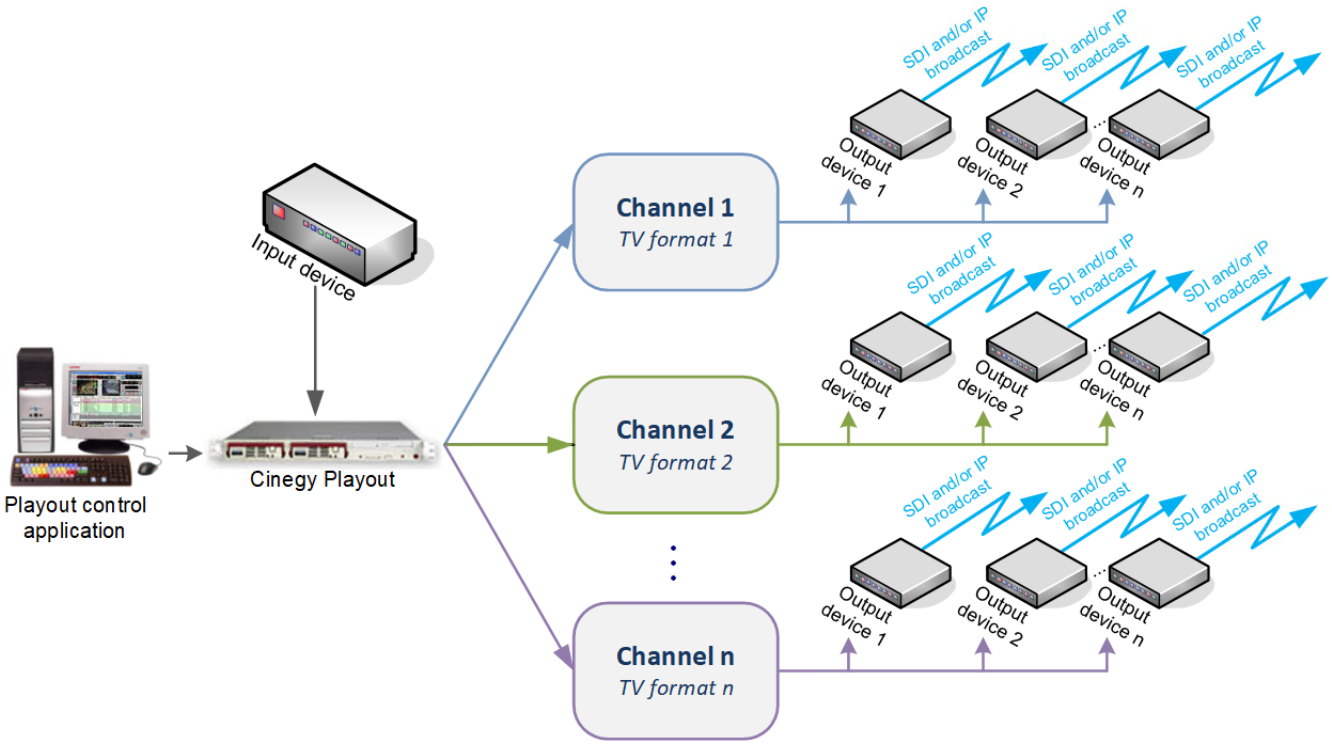
Here choose the video format for the channel being added.

The following illustration shows the playback configuration with the four channels set:



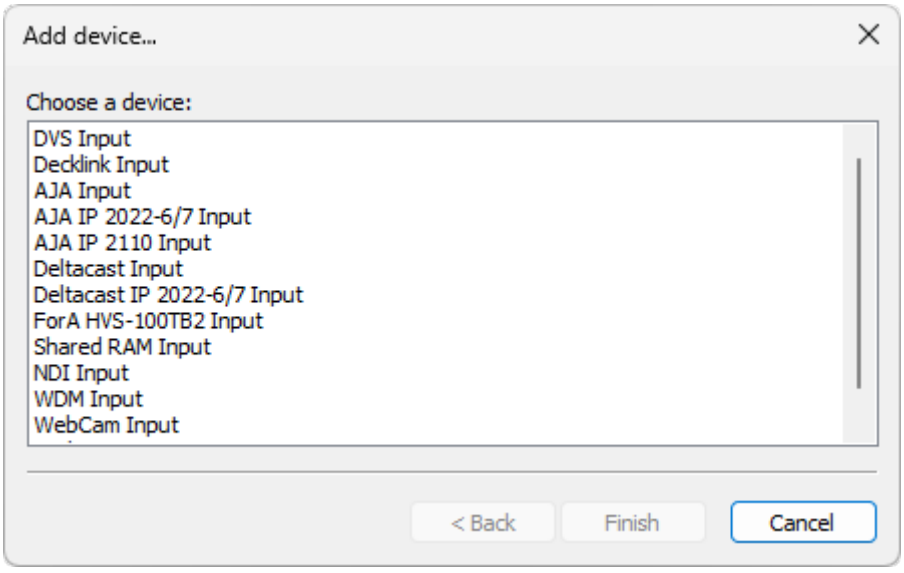
The bold font is used to indicate the master input and output devices as well as the primary TV format (channel).

The following diagram shows the general structure of playback performance:



Input Device

Add device... To set the input device, click "Input" device and press the "Add device…" button. The following dialog box appears:



Select one of devices and press the "Next" button.

The following input devices are available:

- DVS Input
- Decklink Input
- AJA Input
- AJA IP 2022-6/7 Input
- AJA IP 2110 Input
- Deltacast Input

- Deltacast IP 2022-6/7 Input
- ForA HVS-100TB2 Input
- Shared RAM Input
- NDI Input
- WDM Input
- WebCam Input
- Audio Input

	Further configuration for each device is described in the **Input Device Settings** article.

	Each channel can be configured to have multiple input devices.

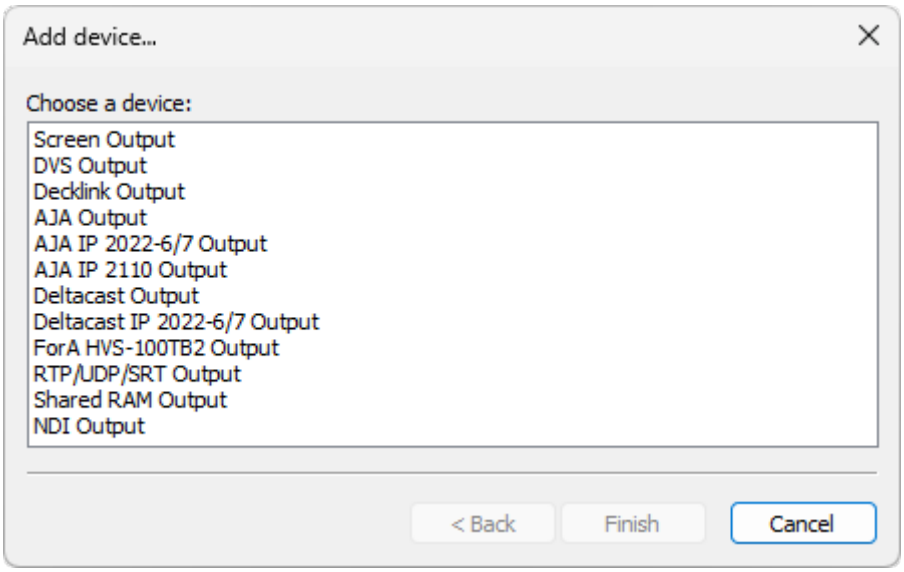
Output Device

The Cinegy Playout instance can run in simulcast mode having dedicated output devices for each TV format (channel). Thus each channel can be configured to have multiple output devices used for simultaneous broadcasting.

Configuring



To add the output device for the selected channel, press the "Add device…" button. The following dialog box appears:



The following output devices are available:

- Screen Output
- DVS Output
- Decklink Output
- AJA Output
- AJA IP Output
- Deltacast Output
- Deltacast IP Output

- ForA HVS-100TB2 Output
- RTP/UDP/SRT Output
- Shared RAM Output
- NDI Output



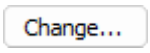
It is possible to add several output devices. In this case, the playback will be performed to all the assigned devices simultaneously.



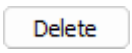
When using multiple output devices, select a device with a hardware clock implementation as the master output device (shown in bold in the list). For example, SDI is a suitable choice when the device supports a hardware clock implementation. Selecting an inappropriate master output device may result in dropped frames.



Further configuration for each device is described in the **Output Device Settings** article.



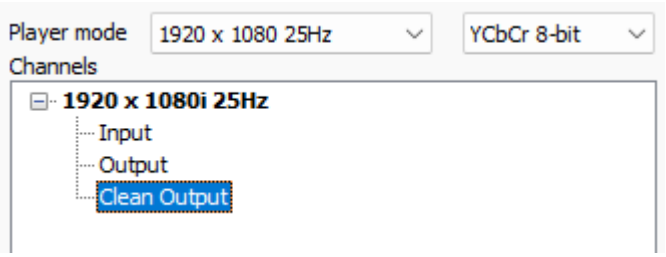
To change the channel or device configuration, choose the required item and press the "Change…" button. Make your changes in the configuration box that appears.



To delete a channel (except the first one) or an output device, select the required one and press the "Delete" button.

Clean Output

A clean output is considered to be the channel output that does not have any secondary events, logos and graphics originally added to it. Selecting "Clean Output" will generate clean feed output not affected by graphics or text.



The configuration of output devices is described here



Please note that the clean output option is licensed. To use the clean output functionality make sure Clean Engine Output license is present.

Video Effects Accelerator

Video Effects Accelerator defines the GPU board or CPU to be used to render video effects in Cinegy Desktop items and Cinegy Title templates, as well as to decode files and streams if it is supported by a video card.



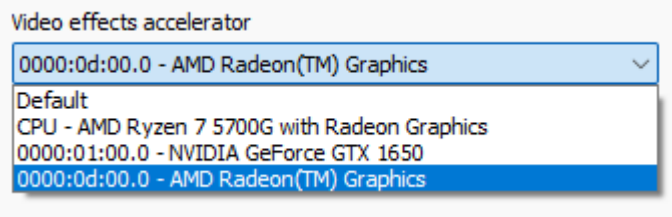
Refer to the this article within **Cinegy Desktop Manual** for details on working with video effects.



Cinegy Title templates are rendered exclusively on the GPU. Ensure that a suitable GPU is installed in your system to efficiently handle the CG rendering workload.

Decoding and effects rendering can be performed on different devices. The Cinegy Playout engine retrieves the list of available video devices (CPU and GPU identified by their PCI bus numbers) from the operating system. These devices are

listed according to the operating system's ordering logic:



You can either select a device explicitly from this list or choose "Default". When "Default" is selected, the Cinegy Playout engine automatically selects the highest-priority GPU for decoding. If the chosen GPU supports hardware acceleration, it will be used; otherwise, the engine falls back to CPU processing. Integrated GPUs and certain types, such as ASPEED Graphics, are considered unsuitable for GPU acceleration and are therefore ignored.

Selecting the topmost CPU option from the drop-down list forces effects rendering to be performed on the CPU, with load distributed evenly across available cores.

If a selected GPU does not support video effects acceleration, the Cinegy Playout engine will automatically revert to CPU processing.

Queue Size

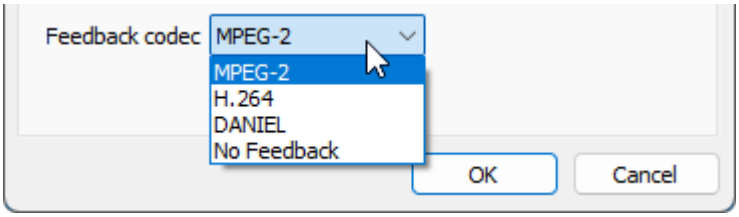
Defines the maximum video buffer size on the playout server. The default value for all formats is 150. For high-resolution content (4K, 8K) it makes sense to reduce the default queue size to those more appropriate for GPU RAM (e.g. 25).

Drop Frame Timecode

Check the "Drop frame timecode" option to enable the NTSC time compensated mode.

Feedback Codec

Cinegy Playout engine generates SRT stream for the playout preview in the Cinegy Air control application as well as for Cinegy Playout Dashboard. To define the feedback codec to be used for this preview stream, select the desired one from drop-down list:



At the same time, the SRT feedback stream can be viewed in another SRT-supporting application, if it is installed on the machine with Cinegy Encode or Cinegy Playout engine on board, such as VLC player or Cinegy Multiviewer. Define the SRT URL address as follows: `srt://<StreamIP>:<Port>`, where

StreamIP – defines the IP address of the machine transmitting the SRT stream;

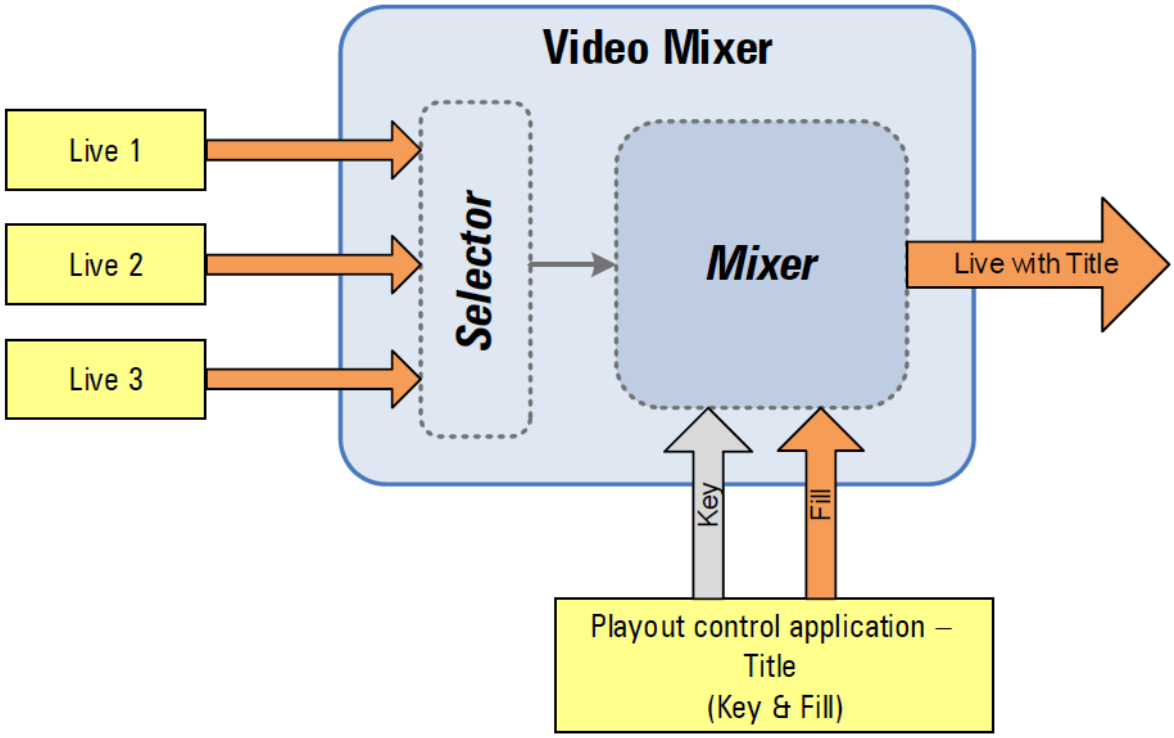
Port – should be set to *5421+N* for main preview or *5471+N* for cued preview; where *N* is the zero-based Playout engine instance number.

For H.264 feedback codec will utilize GPU acceleration if the corresponding device is defined in the "Video effects accelerator" parameter.

Key&Fill Mode (via RGBA Output)

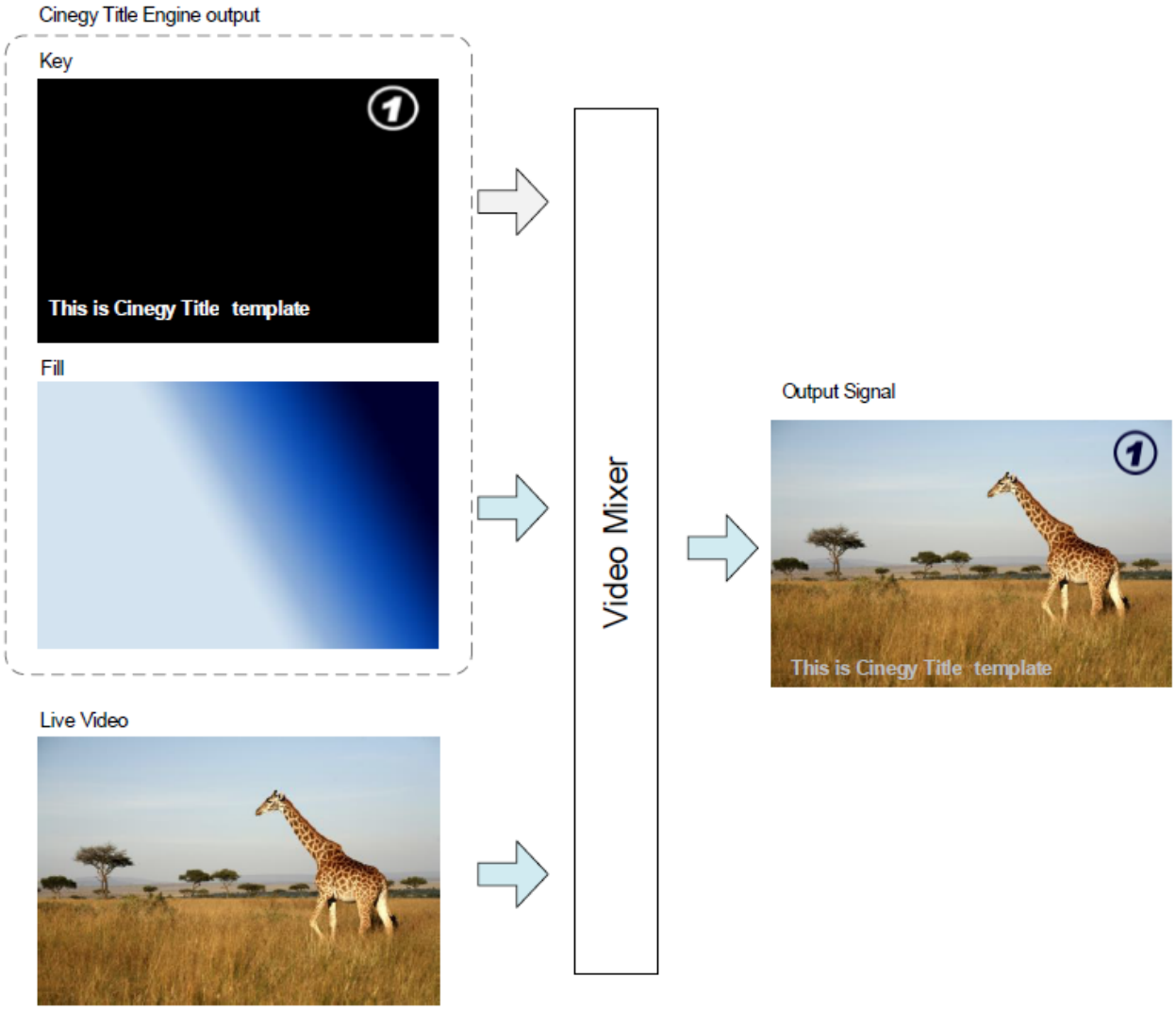
Cinegy Playout can be set up to work in Key&Fill mode allowing to superimpose titles or graphics over the video source using the video mixer upstream or downstream keyers.

The typical scenario using the Key&Fill mode is shown on the diagram below:

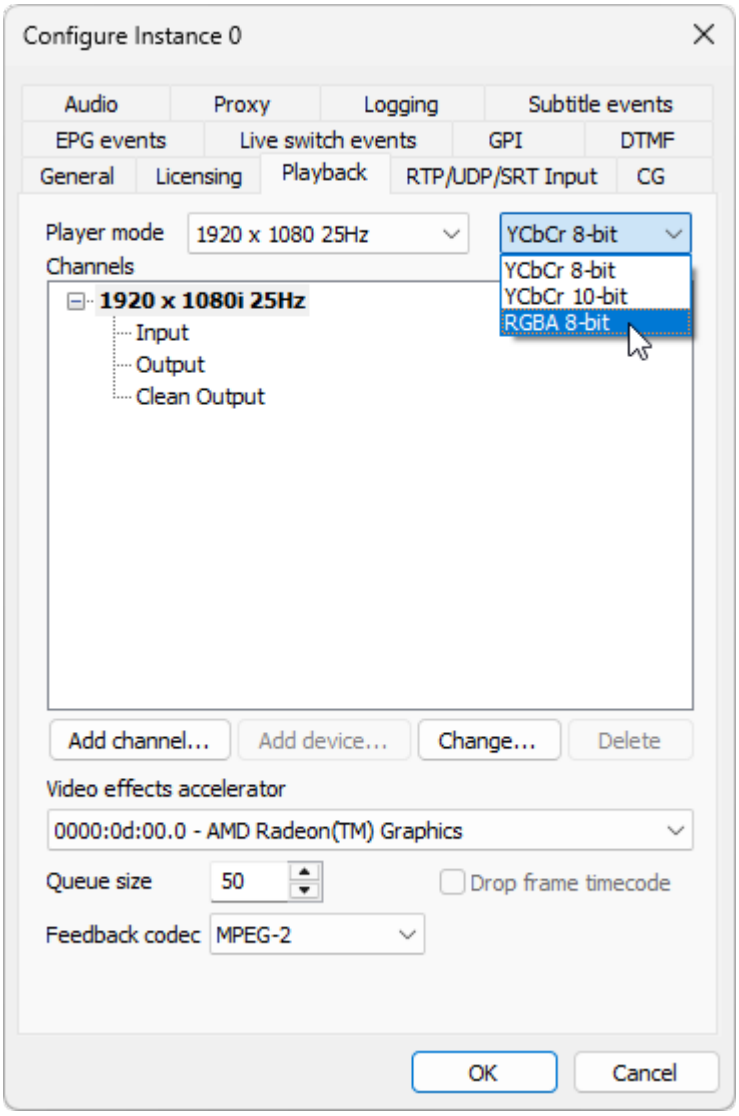


In this configuration Cinegy Playout generates the full frame from the Cinegy Title template, but on the transparent background, containing only the template objects on the output.

Then the external video mixer keyes this frame into the live video signal:



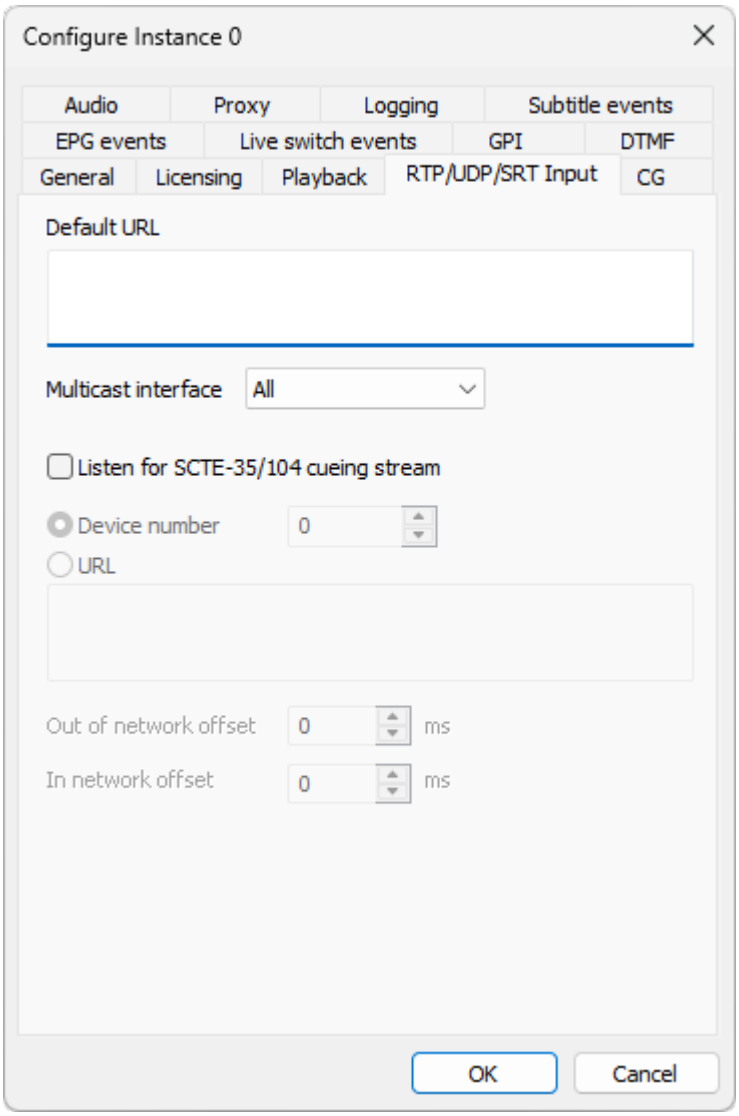
To set up Key&Fill mode, do not specify the input device in the "Playback" tab and select the "RGBA 8-bit" option from the drop-down list as it is shown below:



This will switch the video board to the RGBA 8-bit mode and the card will output two SDI signals (Key and Fill) using "Output A" and "Output B" BNC connectors.

For the list of supported SDI cards in Key&Fill mode, please refer to the **Cinegy Air System Recommendations**.

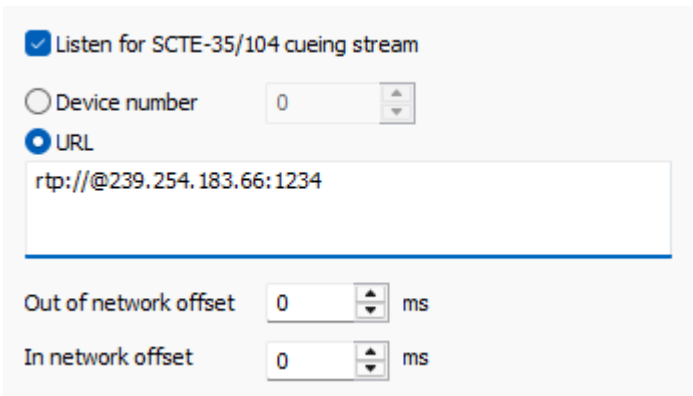
2.5 RTP/UDP/SRT Input



In case when input device is not defined, the source URL specified in the "Default URL" field will be used as default for the live items. This can be changed manually for each particular live item in the "Item Properties" dialog box. When the default URL is not defined, the black frame is broadcast for the live item instead.

Use the "Multicast interface" drop-down list to define the adapters that will be used to get the stream. Select the "All" option to use all adapters; otherwise, choose a local machine's IP address, which may be useful when you need to divide the multicasting subnet from the working subnet.

Select the "Listen for SCTE-35/104 cueing stream" option to enable listening for SCTE-35/104 packets for working with automatic opt-out blocks.





Refer to the **Automatic Opt-Out** article in the **Cinegy Air Manual** for the detailed description of work with automatic opt-out blocks.

Choose one of the following options:

- **Device number** – select this setting if you are using an SDI input and define the corresponding input number configured in the "Playback" tab.
- **URL** – select this setting if IP input is used and enter the RTP, UDP, or SRT URL for the source channel to be used as the live input.

Then configure the following settings:

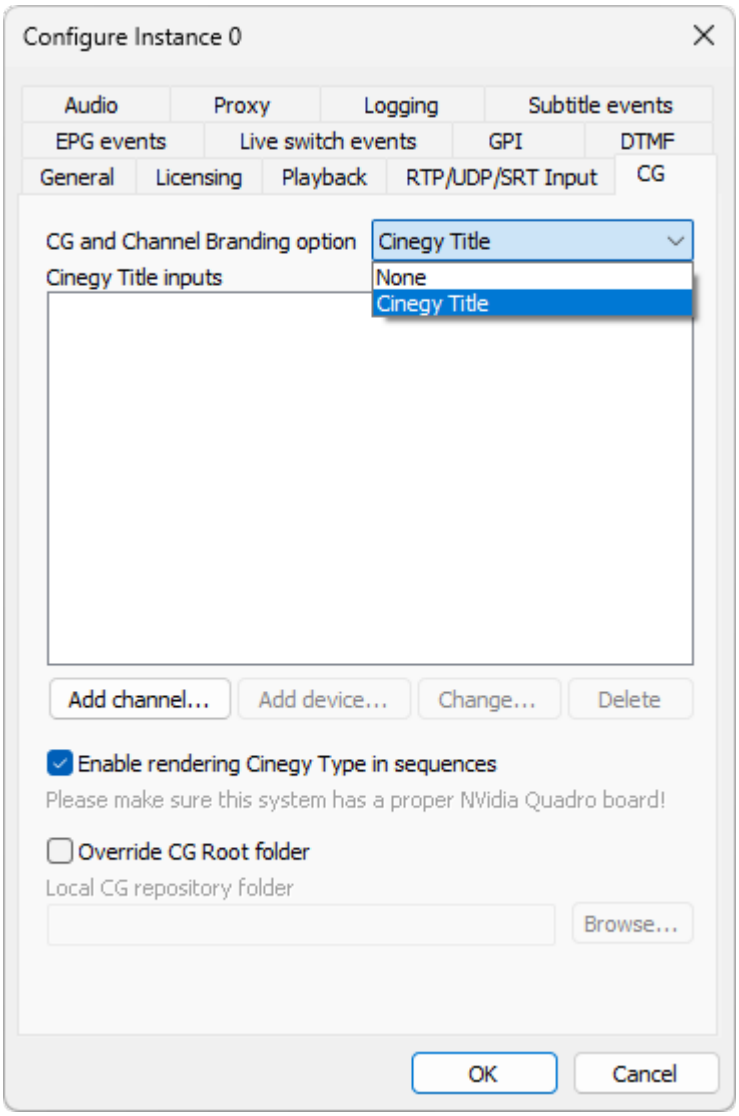
- **Out of network offset** – set the value in range from -10000 to 10000 milliseconds to define the offset for an automatic opt-out block.
- **In network offset** – set the value in range from -10000 to 10000 milliseconds to define the offset for a live event following an automatic opt-out block.

Troubleshooting

If you cannot connect remotely to the Cinegy Playout engine when it is running, please make sure that Windows Firewall is not blocking the inbound traffic on the 5321 TCP port for the PlayoutExApp.exe application.

In order to see the live feedback from remote Cinegy Playout in the Cinegy Air or Cinegy Studio control applications, or let Cinegy Playout receive RTP streams, please make sure your Windows Firewall allows incoming UDP connections on all ports.

2.6 CG



Select the corresponding option from the "CG and Channel Branding option" drop-down list to define whether graphics scenes will be sent to playout:

- **None** – disable CG and Channel Branding option;
- **Cinegy Title** – enable playout of new Cinegy Title graphics.

> Refer to the **Cinegy Title Manual** for more information on working with the Cinegy Title application.

If a playlist contains Sequences with outdated Cinegy Type templates, select the "Enable rendering Cinegy Type in sequences" option. This enables the Cinegy Type templates playback and proxying.

> Cinegy Title templates are rendered exclusively on the GPU. Ensure that a suitable GPU is installed in your system to efficiently handle the CG rendering workload.

> Please, make sure your system has the proper NVIDIA Quadro video board installed for the correct work with Cinegy Type scenes.

If Cinegy Type templates are not used, the "Enable rendering Cinegy Type in sequences" option should be disabled.

In case the dongle is missing or the "Core Engine" license is missing, the Cinegy Playout will work in demo mode. If other license required for work is missing, the Cinegy Playout will not start.

Cinegy Title Inputs

Cinegy Title supports live streams, SDI video inputs, and NDI inputs as RGBA (with alpha channel support), making them available as a texture in a scene. The channel configuration is similar to the one described for playback configuration.

Press the "Add channel" button to start configuring channels along with the required input devices.

Setting the Device ID Number

When the initial device is added, its ID number will be 0. Subsequently added new devices will have ID numbers 1, 2, etc.

For the Key&Fill mode setup, add two separate channels for key and fill signals and configure them correspondingly. Then the numbers of input channel instances should be correctly defined in the "Plate" object parameters.

Cinegy CG Root Folder

The Cinegy Playout engine serves as a tool for real-time graphics rendering, which means that it must have access to the folder containing CG templates and their media. Depending on the environment and requirements, you may want to place all CG templates in a single network location serving all users and playout machines at once, or – for better reliability – copy these templates across all playout machines to make them independent from possible network failures.

CG templates may also have relative paths for the embedded media items (images, video files), and when these templates are moved between locations, neither preview nor playback will work until every template has a valid root path – the so called CG root folder. To avoid this, you can define the Cinegy CG root folder explicitly on every playout machine, overwriting in such a way any "root" path value within a CG scene.

The Cinegy Playout engine will read CG templates from the defined Cinegy CG root folder too.

Here is an example. A designer creates a CG scene in a folder on his drive S:, and this scene references to an image via the relative path ".\media\image.png". When ready, this scene is copied to a different network location (\\Share\CG_Folder) or to the playout machine directly (drive D:\CG_Folder), but Cinegy Playout cannot find this image unless there is the drive S: with exactly the same folder containing this image file.

For correct playback of this CG scene via Cinegy Playout, you can either add local drive S: with exactly the same folder in it or simply specify a new CG templates folder and configure Cinegy Playout to refer to the different location using the "Override CG Root folder" option.

As the result, the Cinegy Playout engine will read CG templates either from \\Share\CG_Folder or the local drive D:\CG_Folder and image file either from \\Share\CG_Folder\media\image.png or D:\CG_Folder\media\image.png accordingly.

It is not recommended to use single network location for all CG templates in order to avoid frame rendering delays on the playout machines in case this location becomes unavailable.

Refer to the **Plate object description** in the **Cinegy Title Manual** for more information about relative paths.

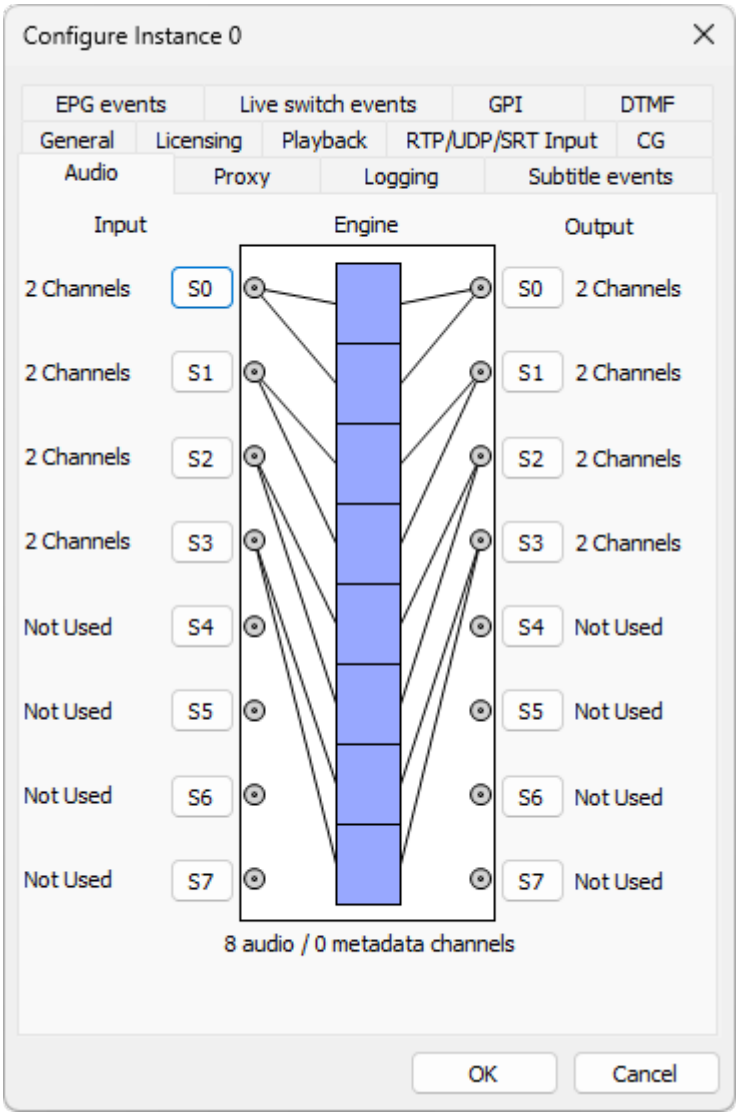
2.7 Audio

Cinegy Playout contains internal mapping of audio inputs to audio outputs. The "Audio" tab allows you to set up sound processing schemes, including configuration of AC-3 decoder and encoder parameters, if needed.

The automatic audio fading of 1 frame duration is applied by default at playlist item switching. Automatic audio fade mode can be disabled by setting the "AutoAudioFade" to "0" in the Cinegy Playout instance configuration file. The configuration file is stored at the following location: *C:\ProgramData\Cinegy\CinegyAir\Config\Instance-n.Config.xml,* where n is the Cinegy Playout instance number.

Refer to the **Output Audio Channels and Mapping** article in the **Cinegy Desktop Manual** for more information on audio mapping inside Cinegy Sequences.

By default, four stereo audio channels are mapped to four stereo output channels.

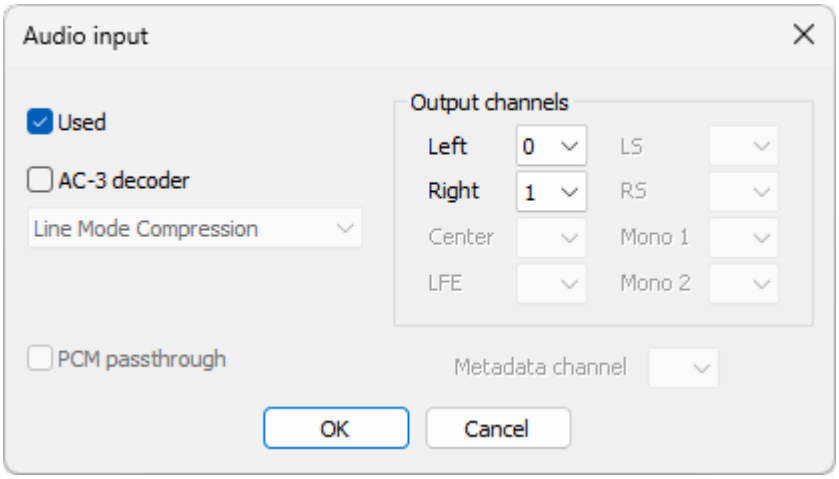


The graphic relations represent the mapping rules inside playout engine that define how the input channels are connected to

the output channels.

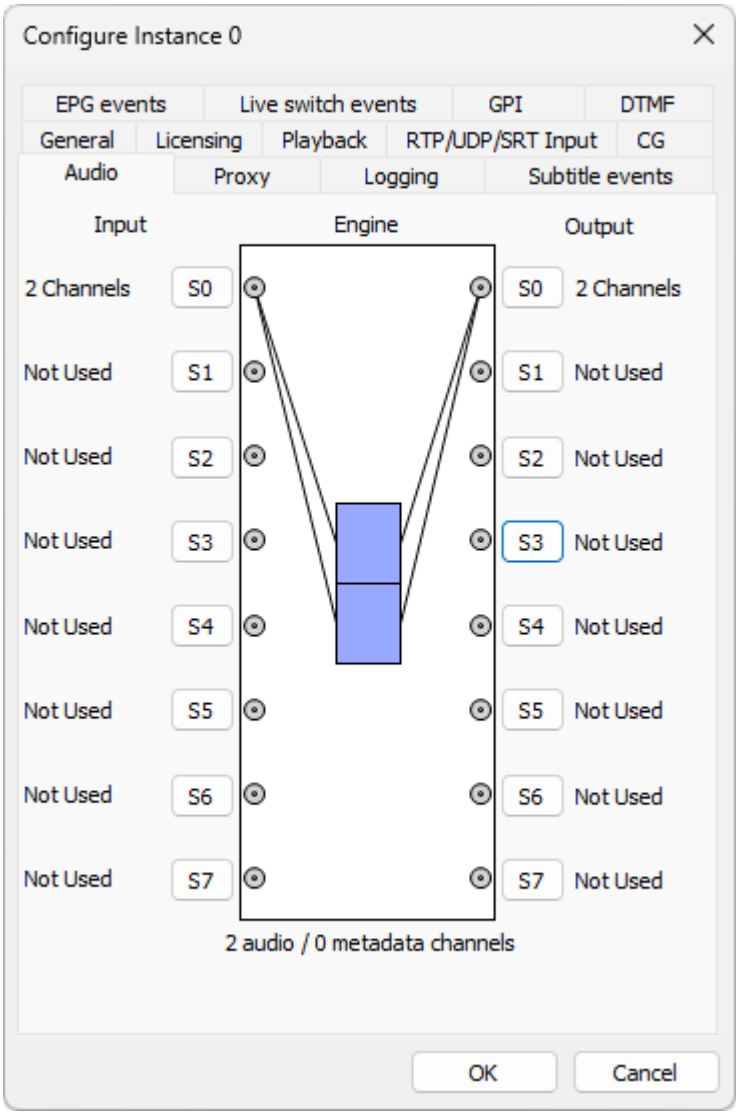
Audio Input Configuration

To set up a particular input channel, press its corresponding button in the "Input" column; the following dialog appears:



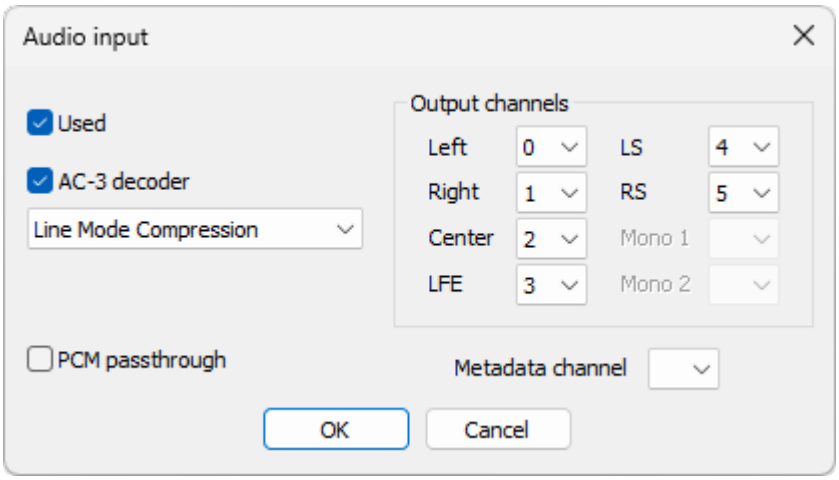
Here you can specify whether this channel will be used, by ticking off the "Used" checkbox, and define the output channels mapped to this input channel. Press the "OK" button to apply the channels settings.

The changes will be reflected on the graphic scheme:



AC-3 Decoding Settings

To use an AC-3 decoder in the input audio channel being configured, select the corresponding checkbox in the "Audio input" dialog; this will enable 4 more output channels:



Define the compression mode choosing the desired option (Line, RF, Custom or "No Compression") from the corresponding drop-down list.

Define the output channels mapped to this input audio channel by choosing the desired values (from 0 to 63) from the corresponding drop-down lists.

Select the "PCM passthrough" checkbox to pass PCM encoded audio to the output.

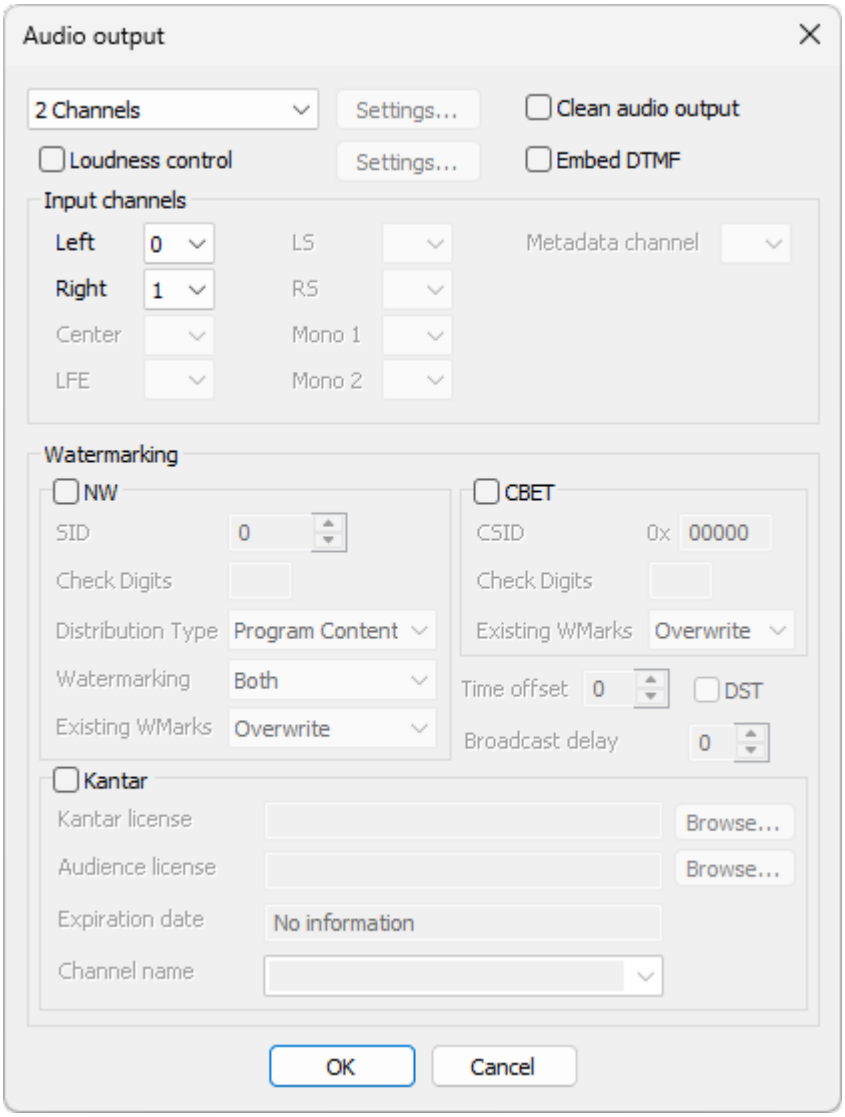
Use the "Metadata channel" drop-down list to define a virtual metadata channel to which the audio decoder will connect.

Having configured the AC-3 decoder audio settings, press the "OK" button to apply your settings.

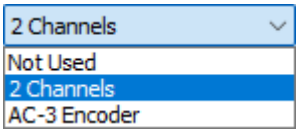
Audio Output Configuration

Settings for the output channels can be configured in a similar way to the input channels.

Press the button of the corresponding channel in the "Output" column; the following dialog box appears:



Select the "2 Channels" encoding type from the drop-down list for stereo audio encoding:



Select the "Clean audio output" option to target specific audio output groups with clean refined audio.

The "Embed DTMF" option allows embedding of DTMF tones into the audio output audio signal. The DTMF tones configuration is performed on the "DTMF" tab.

Also, specify the input channels settings and press "OK" to apply changes.

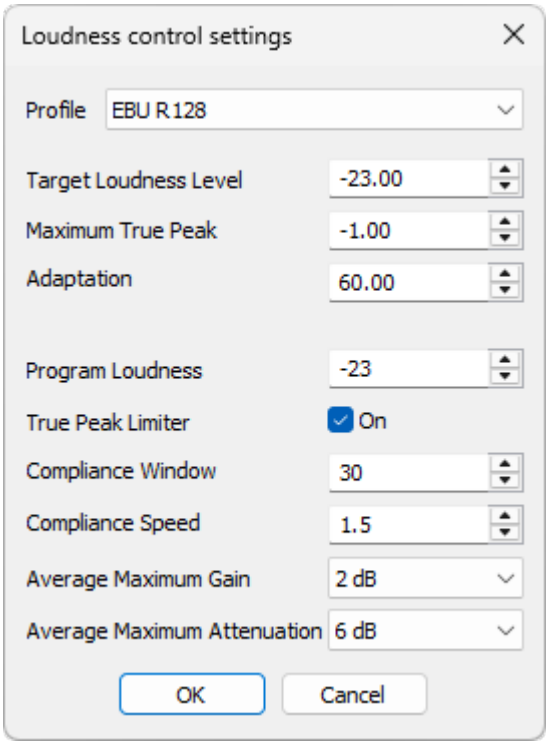
Loudness Control

Selecting the "Loudness control" option enables the preset configurations provided by Minnetonka Audio Software.

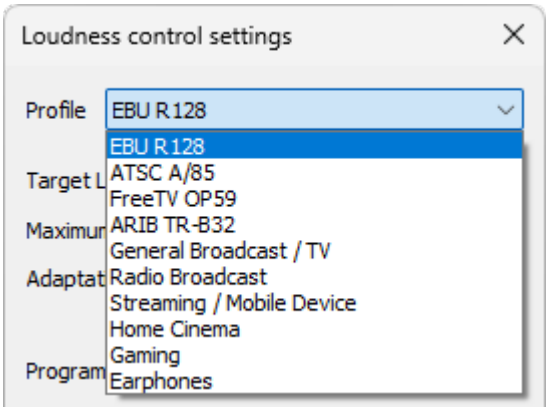
To use the Loudness Control feature, a special license should be provided by Minnetonka Audio Software obtainable through Cinegy as a paid extra. For more details about purchasing licenses, please contact the Cinegy Sales Team.

Selecting the "Loudness control" option without the proper license will prevent the Cinegy Playout engine from starting.

Press the "Settings" button located next to the "Loudness control" option. In the revealed window, specify the following loudness control settings:



- **Profile** – select the required preset profiles from the drop-down list of available profiles:



All profiles, depending on the implemented settings, achieve technical compliance in accordance with loudness recommendations based on ITU-R.BS1770-4.

- **Target Loudness Level** – use the buttons to define the Target Loudness Level at which the incoming average level normalization is aimed.
- **Maximum True Peak** – define the threshold level of the True Peak Limiter applied at the output stream of the processing chain.
- **Adaptation** – define the amount of loudness adaptation applied to the incoming signal.
- **Program Loudness** – define the Program Loudness level of the source signal.
- **True Peak Limiter** – select/deselect this option to enable/disable the True Peak Limiter.
- **Compliance Window** – define the duration, in seconds, of the last part of the program being played.

- **Compliance Speed** – define the amount of Loudness Units (LU) gain or attenuation allowed per second.
- **Average Maximum Gain** – use the drop-down list define the maximum gain applicable to the average program level processed according to Compliance Window and Compliance Speed.
- **Average Maximum Attenuation** – use the drop-down list define the maximum attenuation applicable to the average program level processed according to Compliance Window and Compliance Speed.

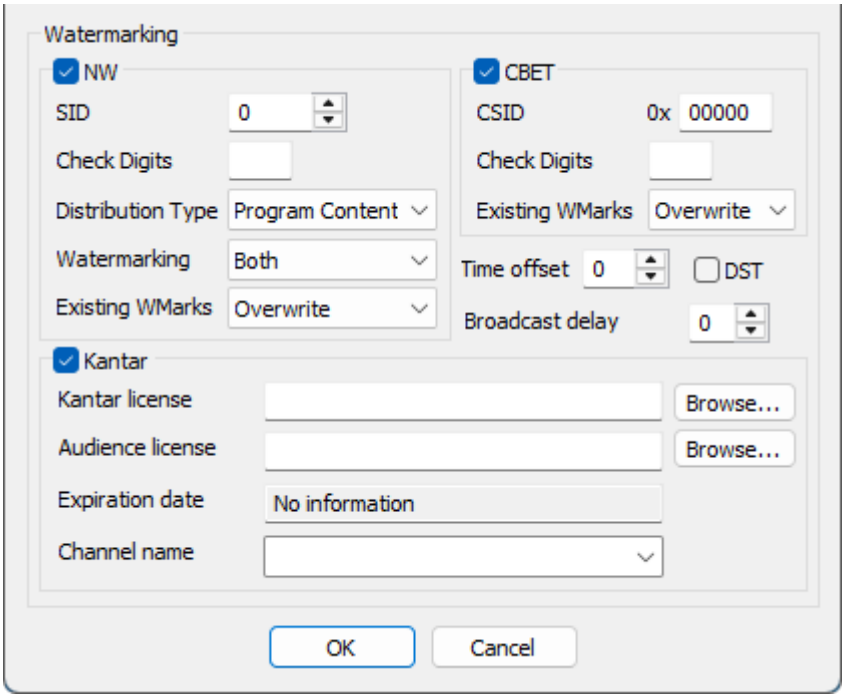
> It is not recommended to set the "Average Maximum Attenuation" value greater than 6 LU.

Watermarking

Cinegy Air supports Nielsen and Fifty5Blue (Kantar) audio watermarking. Nielsen watermarking is implemented using the Nielsen Watermark SDK and supports several watermarking types, including NAES II, NW, and CBET, which is used for Nielsen and Numeris audience measurement.

> The current version of Cinegy Air uses Nielsen Watermark SDK version 6.1.1.

The watermarking parameters are configured separately for each audio output (S0, S1, S2, etc.) in the "Watermarking" group.



The required parameters must be obtained from the corresponding watermarking provider or audience measurement service.

Different watermarks can be applied to RTP/UDP/SRT streams by selecting different audio outputs in the audio settings of each stream. For other output types, watermarking is applied to all configured audio outputs.

> A test license can be provided for evaluation purposes. It inserts standard test identifiers.

Nielsen Watermarking Configuration

> Use of the Nielsen Watermarking feature in Cinegy Air requires a separate, valid license agreement directly with Nielsen. Unauthorized use of Nielsen watermarking technology for audience measurement without a Nielsen license is strictly prohibited.

Please ensure that all parameters for the Nielsen Watermarking and CBET options, if enabled, are entered correctly and completely. Otherwise, the Cinegy Playout engine will fail to start. For detailed information about the error, check the log file. Logging is configured on the "Logging" tab, and full logging must be enabled.

The following parameters are available for the Nielsen watermarking configuration:

- **SID** – Nielsen source ID, which must be populated only with codes provided by an authorized Nielsen representative. One or more SIDs are assigned to each content provider or distribution source. Included as a component of each watermark, the SID uniquely identifies the distribution source.
- **Check Digits** – two uppercase alpha characters, corresponding to the SID assigned by Nielsen.
- **Distribution Type** – specifies the watermark type: Program Content or Final Distributor. Typically, Program Content watermarks are assigned to syndication content or to content providers (e.g., broadcast networks), while Final Distributor watermarks are assigned to local broadcast affiliates or to cable network content.
- **Watermarking** – defines the type of watermarking to activate this session. The following types are available for choosing:
  - NAES II – for Legacy NAES II watermarking;
  - NW watermarking;
  - Both NAES II and NW are activated.
- **Existing WMarks** – determines how to handle a second Final Distributor code if Final Distributor codes are already present in the stream (NAES II HF and NW). The options are:
  - *Overwrite* – the original watermarks are replaced with the new ones.
  - *Preserve* – the pre-existing watermarks are left intact; new watermarks are inserted only in portions of the audio stream where there are no pre-existing watermarks.

Please note that legacy NAES II watermarks will be overwritten, and Nielsen watermarks NW will be appended. Unlike NAES II watermarking, Nielsen watermark processing does not support the overwriting of audio codes that are present in the stream before the watermarking process begins. Instead, the watermark engine leaves space for a second (and possibly a third) Final Distributor SID in the program band.

Nielsen recommends skipping the LFE channel, surround left channel, and surround right channel from NW encoding to fix the audibility issue.

Nielsen and the Nielsen logo are trademarks or registered trademarks of The Nielsen Company (US), LLC.

CBET Configuration

CBET (Critical Band Encoding Technology) is a Nielsen watermarking used for audience measurement. Cinegy Playout supports CBET watermarking for Nielsen and Numeris audience measurement.

When the "CBET" option is selected, configure the following parameters:

- **CSID** – CBET Source ID used to identify the source for which the CBET watermark is inserted. The value is assigned by the relevant audience measurement service and may be provided directly or as a layer-based notation. The first digit of the CBET Source ID indicates the CBET layer as follows: 1 - local layer; 2 - network layer; 5 - TV local layer.

For a layer-based notation such as X1233 Layer 1, enter the "11233" value in the "CSID" field.

- **Check Digits** – two uppercase alphabetic characters associated with the CSID, which uniquely identifies the content provider. The value is assigned by the relevant audience measurement service and may be provided directly or as a layer-based notation.

  If the CBET check-digit string does not match the CSID, the authenticator does not permit watermarking with the CSID.

- **Existing WMarks** – select either the "Preserve" or "Overwrite" option from the drop-down list.

If the combination of CBET and NAES II watermarks is set, the output will contain CBET, NAES II, and Nielsen watermarks.

Time Offset and Delayed Broadcast Encoding

- **Time offset** – defines the time difference in hours between the Origin and Destination time zones, ranging from -11 to +11.

  The time offset affects only NW and NAES II timestamps, and does not affect CBET timestamps.

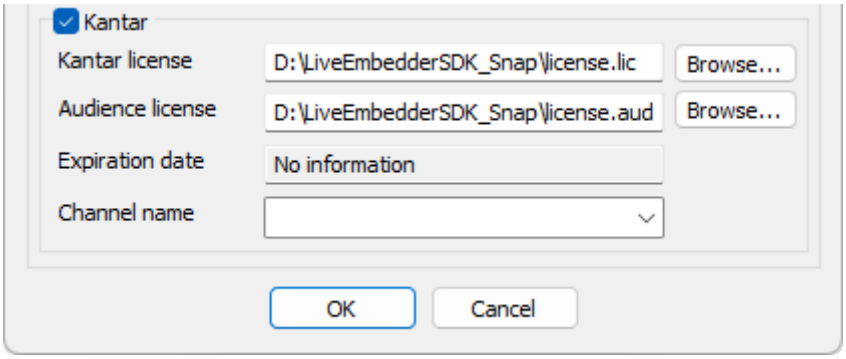
- **DST** – enables the daylight saving time (DST) state of the destination time zone. Used together with the Time Offset parameter when encoding content for a remote time zone.
- **Broadcast delay** – specifies the time delay applied to live encoding in one time zone when recording content intended for broadcast in a different time zone. To use it, the "Time offset" parameter must be set to a value between -11 and -1.

Fifty5Blue (Kantar) Watermarking

Fifty5Blue watermarking (formerly known as Kantar) requires a dedicated license. To acquire this license, follow the steps:

1. Download the Kantar Media Authorization Tool from either the Cinegy Partner portal or the Cinegy Customer portal in the "Utilities and Addons" section.
2. Unzip the archive and run the AuthorizationCodeCL.exe file to generate the authorization code. The text file with an authorization code is created in the same folder.
3. To obtain a watermarking embedding license, fill in the contact form on the Fifty5Blue website and provide the following information:
   - Product name and version
   - Customer name
   - Country
   - If different, country of broadcast
   - Channel(s) to be watermarked
   - Customer internal name for the hardware platform
   - AuthorizationCode for each hardware or login contact for online solution
4. You will receive two license files from Fifty5Blue: license.lic - the Fifty5Blue license and license.aud - the Audience license. The Audience license contains the information about channels and channel identifiers.

   Specify the paths to the corresponding license files in the "Kantar" section in the "Audio" tab in the Cinegy Playout configurator:



The license expiration dates are displayed in the corresponding fields.

In the "Channel name" drop-down list, select the name of the broadcast channel or enter it using the keyboard. This channel name is defined in the Audience license.

The Audio Watermarking Embedder SDK generates events with text messages recorded in the log files. The logging must be configured in the "Logging" tab, and full logging must be enabled. The log file can be found in the folder specified in the "Debug log folder" field.

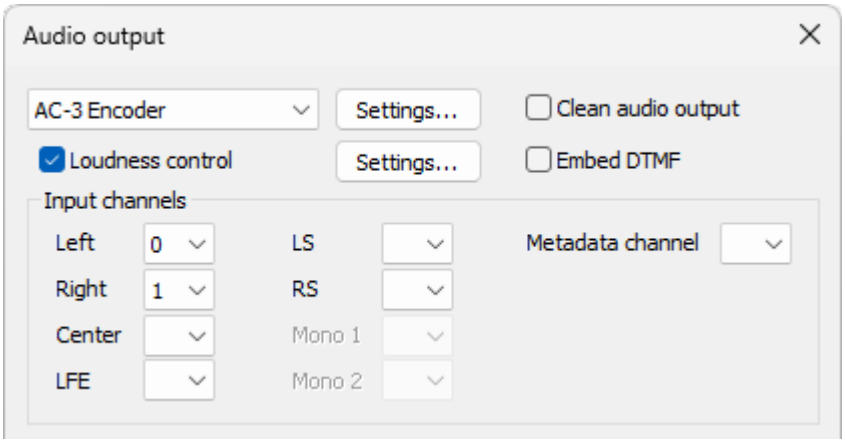
Fifty5Blue watermarking introduces a fixed 2-frame delay at 25/29.97 fps and a 4-frame delay at 50/60 fps.

To maintain the accuracy between the Fifty5Blue watermarking timestamp and the Cinegy Air server system time, a timecode resynchronization function is applied once every 10 hours, or each time the times differ by more than 10 seconds, and this process is displayed in the Cinegy Air logs.

If maintenance is required on the Fifty5Blue system or settings, the Cinegy Playout engine needs to be restarted, and thus the affected channel will need to be taken off air. There is no impact on the audio signal by selecting or deselecting the "Kantar" option in the configuration settings; delays are added or removed by selecting/deselecting the "Kantar" option correspondingly.

AC-3 Encoding Settings

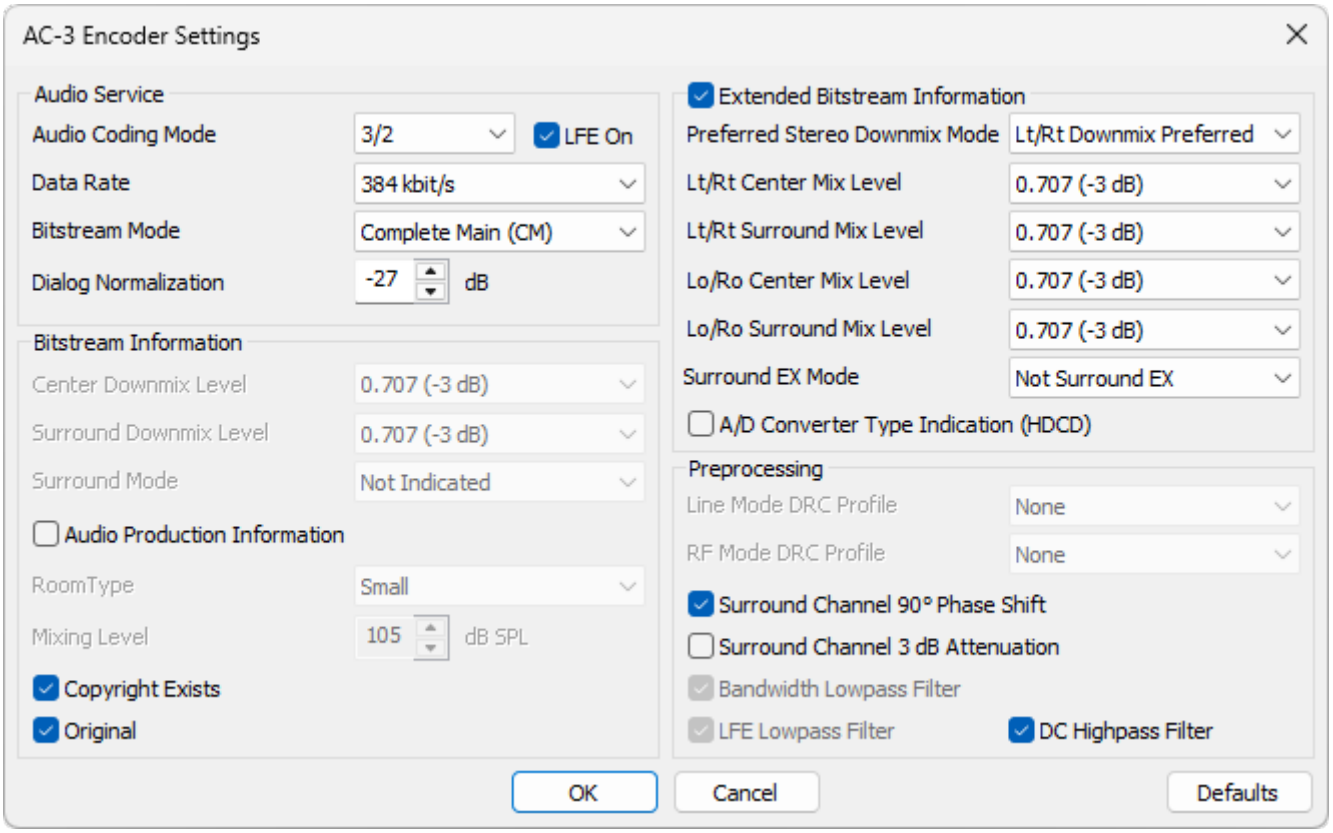
To use the AC-3 Encoder in the output audio channel being configured, select the "AC-3 Encoder" option from the channels drop-down list; this will enable 4 more input channels:



Define the input channels mapped to this output audio channel by choosing the desired values (from 0 to 63) from the corresponding drop-down lists. In this dialog, you can also define a virtual metadata channel to which the audio encoder will connect; metadata from items in the Cinegy Air playlist will be recorded to this channel.

AC-3 Encoder settings, preset by default, work in most scenarios.

If you want to change default values, press the "Settings…" button; the following "AC-3 Encoder Settings" dialog appears:



In this dialog, you can define various audio and bitstream parameters.

Audio Service Settings

Audio Coding Mode – the number of audio channels of the encoded stream in the x/y format, where *x* is the number of front channels and *y* is the number of rear (surround) channels. To include the LFE (Low Frequency Effects) channel in the encoded stream, select the "LFE On" option.

> Please note that the "LFE On" option is not available for 1/0 and 2/0 audio coding modes.

Data Rate – the data rate for the encoded audio file. The higher the rate, the better the quality.

Bitstream Mode – the content type of the encoded material.

Dialog Normalization – the average dialog volume level that is used to match audio volume between program sources. The decoder attenuates the program volume based on this value to achieve a consistent volume level across the programs. This level is specified on an absolute scale ranging from -1 dBFS to -31 dBFS.

Bitstream Information Settings

Center Downmix Level – if the encoded audio contains three front channels (Left, Center, and Right), but the receiver has only two front speakers (Left and Right), this parameter defines the attenuation level for the Center channel.

Surround Downmix Level – if the encoded audio contains one or more surround channels and the receiver does not have surround speakers, this parameter defines the attenuation level for the surround channel(s).

Surround Mode – when 2/0 (stereo) audio coding mode is used, this parameter defines whether the signal is coded as Surround.

Audio Production Information – select this option to make the room type and mixing level values valid.

Room Type – the type of the room where the mixing session took place.

Mixing Level – the peak sound pressure level (SPL) used during the mixing session.

Copyright Exists – select this checkbox to indicate that the encoded material is copyrighted.

Original – select this checkbox to indicate that the encoded material is original content.

Extended Bitstream Information Settings

Select the "Extended Bitstream Information" checkbox to enable additional parameters for stereo downmixing.

If the "Extended Bitstream Information" option is not selected, the Legacy stream is used.

Preferred Stereo Downmix Mode – this parameter allows you to select the preferred Lt/Rt or Lo/Ro downmix. This setting is available for 3/2, 3/0, 2/1, 3/1 and 2/2 audio coding modes.

Lt/Rt Center Mix Level – the nominal attenuation level of the center channel with respect to the left and right channels in the Lt/Rt downmix.

Lt/Rt Surround Mix Level – the nominal attenuation level of the surround channels with respect to the left and right channels in the Lt/Rt downmix.

Lo/Ro Center Mix Level – the nominal attenuation level of the center channel with respect to the left and right channels in the Lo/Ro downmix.

Lo/Ro Surround Mix Level – the nominal attenuation level of the surround channels with respect to the left and right channels in the Lo/Ro downmix.

Surround EX Mode – define whether the material is to be encoded in Surround EX. This setting is available for 3/2 and 2/2 audio coding modes.

A/D Converter Type Indication (HDCD) – select this checkbox to indicate that audio has passed through a particular A/D conversion stage, so that a decoder may apply the complementary D/A process.

Preprocessing Settings

Line Mode DRC Profile – defines the dynamic range compression profile for line mode.

RF Mode DRC Profile – defines the dynamic range compression profile for RF mode.

Surround Channel 90-Degree Phase Shift – specifies whether the 90-degree phase shift should be applied to the surround channels for the simple Lt/Rt downmix.

Surround Channel 3 dB Attenuation – defines whether the 3 dB attenuation has been applied before encoding, when encoding it for consumer home theater playback.

Bandwidth Lowpass Filter – specifies whether to apply the lowpass filter that removes unencoded high-frequency signals.

LFE Lowpass Filter – defines whether a 120 Hz lowpass filter is applied to the LFE (Low Frequency Effects) channel. This option is not available if the LFE channel is disabled.

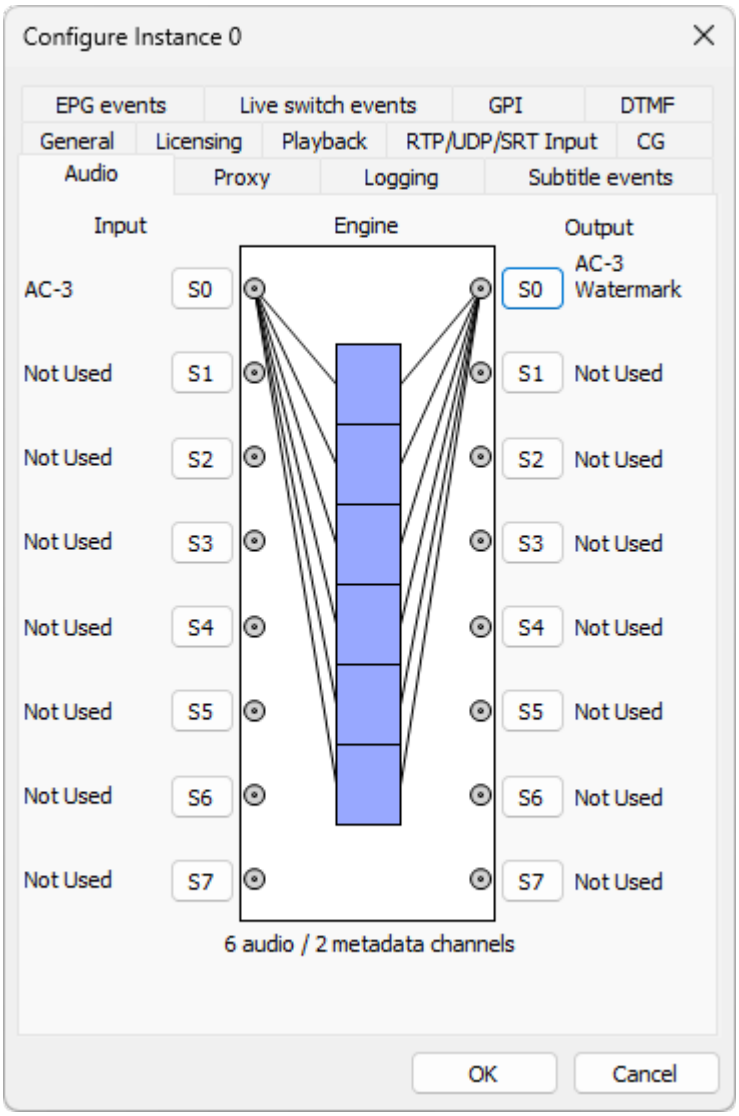
DC Highpass Filter – specifies whether to apply a DC-blocking highpass filter to all input channels.

Defaults — Press the "Defaults" button to restore default AC-3 Encoder settings.

Press "OK" to apply your settings or "Cancel" to discard the changes and exit the dialog.

Having configured the AC-3 audio settings, press the "OK" button in the "Audio output" dialog to apply them.

The changes will be reflected on the graphic scheme:



2.8 Proxy

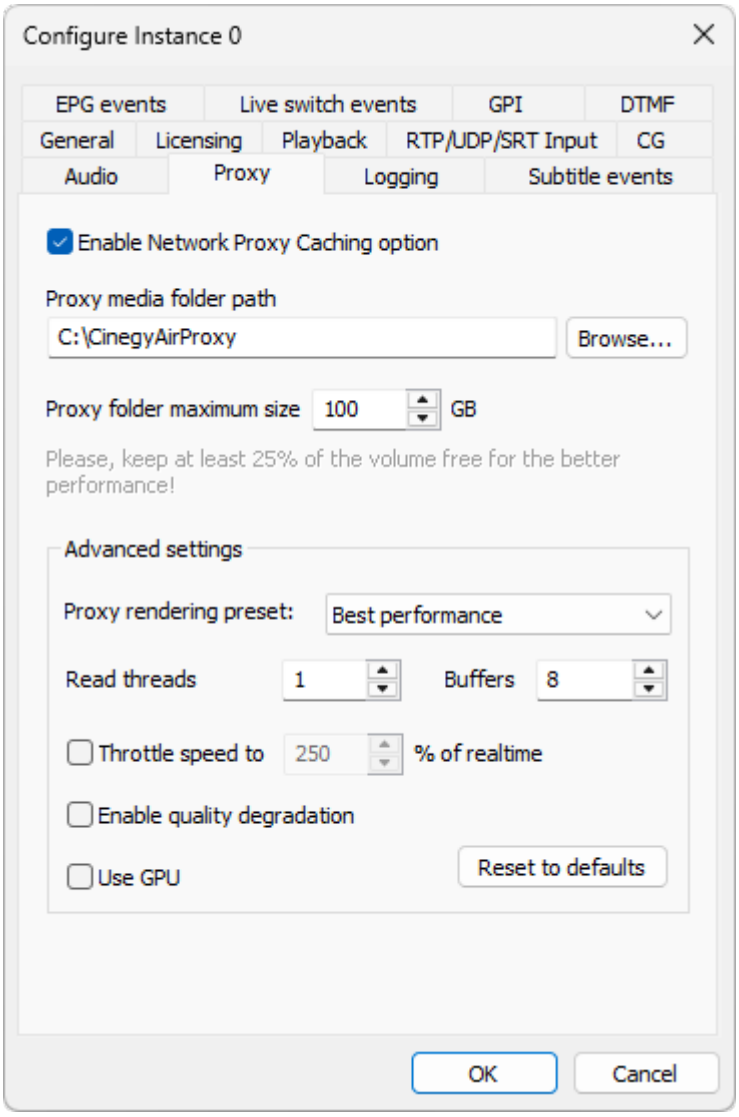
The item proxying feature requires a dedicated license.

The "Enable Network Proxy Caching option" ensures quick and safe playlist broadcasting. Having configured the Network Proxy Caching option, the Cinegy Playout engine will automatically start background rendering and encoding process of creating a high-quality render cache using light-weight compression. Using a smart caching algorithm via the corresponding settings, it takes into account the time of the material to be on air and the amount of space assigned to this local cache. Once the chunks for playlist items are played out, the Cinegy Playout engine automatically deletes them, unless they are not included in the playlist at the nearest time, replacing the deleted chunks with newly generated ones.

If this option is selected, only the most recent items will be played from their original location, and the rest of the playlist items will be played from the local proxy media folder. Thus, even if you immediately start playing the item, only its beginning

will be played out from the remote footage. The item will be played out from the local cache on condition that there is enough computing power/performance for real-time or prior local cache creation and timely local chunk generation. In case a playlist has enough proxied material stored in the local cache, the Playout engine will still continue playback even if access to the original clips is missing.

The proxy caching is configurable via the "Proxy" tab:



To set proxy configuration, you should:

1. Set the proxy folder path.
2. Set the proxy folder size limit.

⚠	Leave at least 25% free space on the volume for the proxy to ensure stable work and smooth performance.

⚠	Manually deleting proxy files during playout disrupts the proxying algorithms and is therefore strongly discouraged. If proxy files have been deleted, the Cinegy Playout Engine must be restarted to restore proper proxying functionality.

Advanced Settings

The following settings are available here:

- **Proxy rendering preset** – choose one of the following proxy rendering presets: Best performance, Medium quality, High quality, or Uncompressed. The Daniel2 encoder is used in all presets.

  To benefit from the usage of Daniel2 GPU encoding, it is necessary to have a proper NVIDIA GPU board. If no valid GPU is available, the Daniel2 encoder will automatically switch to CPU mode.

- **Read threads** – define the number of proxy threads from 1 to 32.
- **Buffers** – define the number of proxy buffers from 1 to 16.

Proxy Throttling

The "Throttle speed to <number>% of realtime" option is used to set the proxy speed limit. As a result, CPU usage will be decreased by increasing proxy time.

Please note that if the proxy speed does not exceed the defined limit, throttling will not work.

The real-time value depends on the current TV format frame rate. For example, PAL format frame rate is 25 fps. If you set the 1000% speed limit (250 fps) and the engine attempts to proxy the material at a speed over 250 fps, the time breaks will be added to the proxy process. The minimum configurable throttle speed is 100% (realtime).

Quality Degradation

A clip may contain media in three qualities: high, medium, and low. By default, the highest available quality is used for proxying. If, for some reason, this quality becomes unavailable, no proxy files are created for the clip. When the "Enable quality degradation" option is selected, the next highest available clip quality will be proxied.

If a clip has been proxied with quality degradation while the high-quality proxy files are needed, it can be reproxied via the "Drop proxy" command in Cinegy Air and Cinegy Studio.

Use GPU

This option is supported when an NVIDIA graphics card is installed in the system. Select the "Use GPU" option to enable GPU-accelerated proxy file generation and encoding using the default system GPU.

If the "Use GPU" option is enabled on a system without an NVIDIA graphics card, proxy file generation will not occur.

Default Settings

Reset to defaults Press the "Reset to defaults" button to restore the default proxy settings.

Troubleshooting

To find out whether Cinegy Playout is playing the original media or its proxy copy, you can stamp the frames once they are rendered by changing the "StampProxyFrames" parameter value to "1" in the following file:

C:\ProgramData\Cinegy\CinegyAir\Config\Instance-n.Config.xml

where *n* is the number of the Cinegy Playout instance.

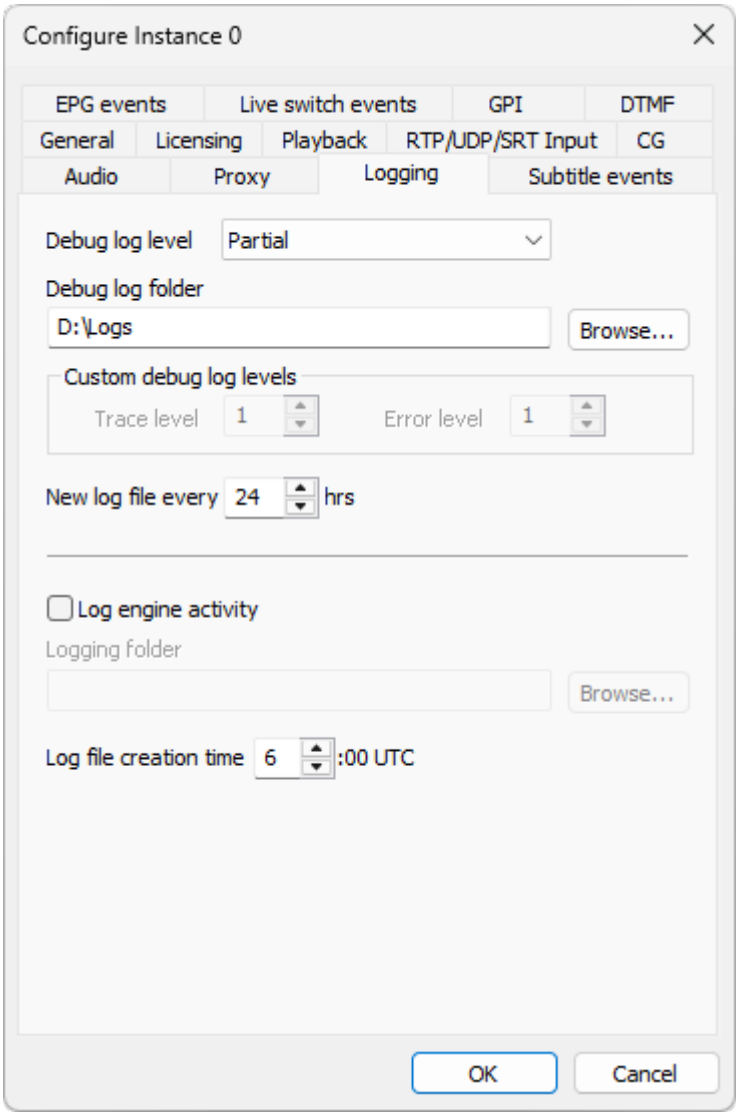
Frames being read from the proxy folder are marked with color boxes:



2.9 Logging



It is highly recommended to keep logging enabled at all times, as log files are often the only source of information available for identifying the cause of an issue. Since log files can grow very large, configure their storage location on a drive other than the operating system drive (C:) to prevent them from consuming system disk space and potentially interfering with system processes.



- **Debug log level** – define the level for the log file; you can choose "Full", "Partial", "Custom" level or "None" for no logging.
- **Debug log folder** – define the location of the log file where the sequence of operations is recorded. Press the "Browse… " button to locate the folder where the debug log file in the text format will be stored or simply enter the file path via the keyboard.

- **Custom debug log levels** – manually choose the debug log level by changing values of trace level (0 – 10) and error level (0 – 10).

  This group is available for the custom level logging only.

- **New log file every** – define the frequency of a new log file creation.
- **Log engine activity** – select the checkbox to enable log files creation for an engine instance activity.
- **Logging folder** – define the location of the log file that includes info about the engine activities. Press the "Browse…" button to locate the folder where the log file in the text format will be stored or simply enter the file path via the keyboard.

  The activity log must contain precise information about all events executed by the Cinegy Playout engine like item start, item stop, etc. The logging of a playlist item is carried out synchronously with the item's start to ensure adding a corresponding entry to the log file. If there is a delay in writing the activity log, it may result in a delay in the item start. Therefore, it is highly recommended to record activity logs on the local disk.

- **Log file creation time** – define when a new log file will be created for each day.

Please keep in mind that logging events are tracked in Coordinated Universal Time (UTC) standard and may not match your local time.

Activity Logging

With the "Log engine activity" option enabled, information about launched commands and other activity is added to the log. The custom instance name is embedded into the log file name as a prefix.

The following is an Activity Log file description. Events are line-delimited, one event per line.

All timestamps (date and time) in the log file are standard and in accordance with ISO 8601. They correctly indicate UTC time zone as they have Z suffix: 2022-11-28T04:00:00.051Z

- Events to mark that Cinegy Playout has started and stopped (should appear first and last in log in normal operations, unless log has rolled over) are:

```
"<date>","<time>","ENGINE","START"
"<date>","<time>","ENGINE","STOP"
```

- Events to show specific actions on the VIDEO output are:

```
"<date>","<time>","VIDEO","BLACK"
"<date>","<time>","VIDEO","BYPASS"
"<date>","<time>","VIDEO","CLEAN"
"<date>","<time>","VIDEO","NORMAL"
```

  Where:

  - **BLACK** means that video black is an output as a result of pressing the "BLACK" button in Cinegy Air.
  - **BYPASS** means that the configured video input signal is routed to the output as a result of pressing the "BYPASS"

button in Cinegy Air.

- **CLEAN** means all graphics and audio elements are now off (as a result of pressing the "CG off" button in Cinegy Air).
- **NORMAL** means video output has returned to normal (for example following a BLACK or BYPASS event).

- Events to show the triggering of secondary event operations on the engine (e.g. router control, Cinegy Title layer activation) are:

```
"<date>","<time>","<device>","<command>","<op1>","<op2>","<op3>"
```



Please see relevant device documentation for details of interpreting command and op codes.

- Events that show activity on individual parts of the output are:

```
"<date>","<time>","<device>","<event>","<unique
ID>","<name>","<description>","<Traffic ID>","<Subtitle ID>","<EPG ID>","<Mark
In/Out>","<duration>","<error flag>"
```

<device> specifies one of the output types, it can have one of the following values:

- **ENGINE** means that the event is for Cinegy Playout.
- **VIDEO** means that the event is for the primary video output layer.
- **LOGO** means that the event is for the basic logo layer.
- **CG_LOGO** means that the event is for a Cinegy Title layer on the LOGO (topmost) level.
- **CG_<n>** means that the event is for a Cinegy Title layer on the n^{th} level.
- **OVL_<n>** means that the event is for the basic overlay layer on the n^{th} level.
- **EVENT** means that the event is for a secondary event (Cinegy Event Manager device name is specified) layer.

<event> specifies the type of action that happened at the specified time. For example, START for the VIDEO device defines the start of playlist item playback and STOP defines the actual stop of the item playback.

<unique ID> specifies the playlist item ID being played back. This ID can be found in the playlist XML and it uniquely identifies the item being played back.

<name> / <description> specifies the corresponding playlist item info that is taken from the actual playlist.

<Traffic ID> specifies the "house number" / "material ID" that is usually assigned by Traffic System. For example, when the same clip is inserted into the playlist more than once, its Unique ID properties will be different, but the Traffic ID will be the same.

<Subtitle ID> specifies the ID of the subtitle stream that is played back simultaneously with the playlist item. The subtitle stream can be generated by an external device (Cavena, for example) or by Cinegy Subtitling Service.

<EPG ID> - defines the EPG ID of the program to which this item belongs.

<Mark In/Out> specifies the item start (START event) or item end (END event) timecode.

<duration> specifies the planned (START event) or actual (END event) duration of the playback. In case item playback is terminated earlier, the Out/Duration values will specify the actual timings of the item playback.

`<error flag>` specifies whether there were any errors during the item playback. The error flags description depends on the position of digits in the error code:

- *0000* – no errors;
- *1xxx* – if the "1" digit is in the first position, this means that the media is unavailable or corrupt (the color bars are displayed);
- *x1xx* – if the "1" digit is in the second position, this means that the quality autodegradation has occurred;
- *xx1x* – if the "1" digit is in the third position, this means that the frame freeze has occurred.
- The fourth position of the error code is reserved for future use.

2.10 Subtitle and EPG Events



These features are topical for Cinegy Air only.

A vendor may introduce a mechanism for timecode distribution via integration into the Cinegy Playout using the standard secondary events mechanism.

Cinegy Playout can raise an event with a regular update interval (which is recommended to be in a range between 5 and 10 seconds), which vendors may then hook into their system. The nature of this timecode distribution may be either through direct, targeted injection or via some network-based repeater mechanism. Distribution beyond the initial Cinegy-raised event is outside the scope of the Cinegy Playout system and is left to the implementer.

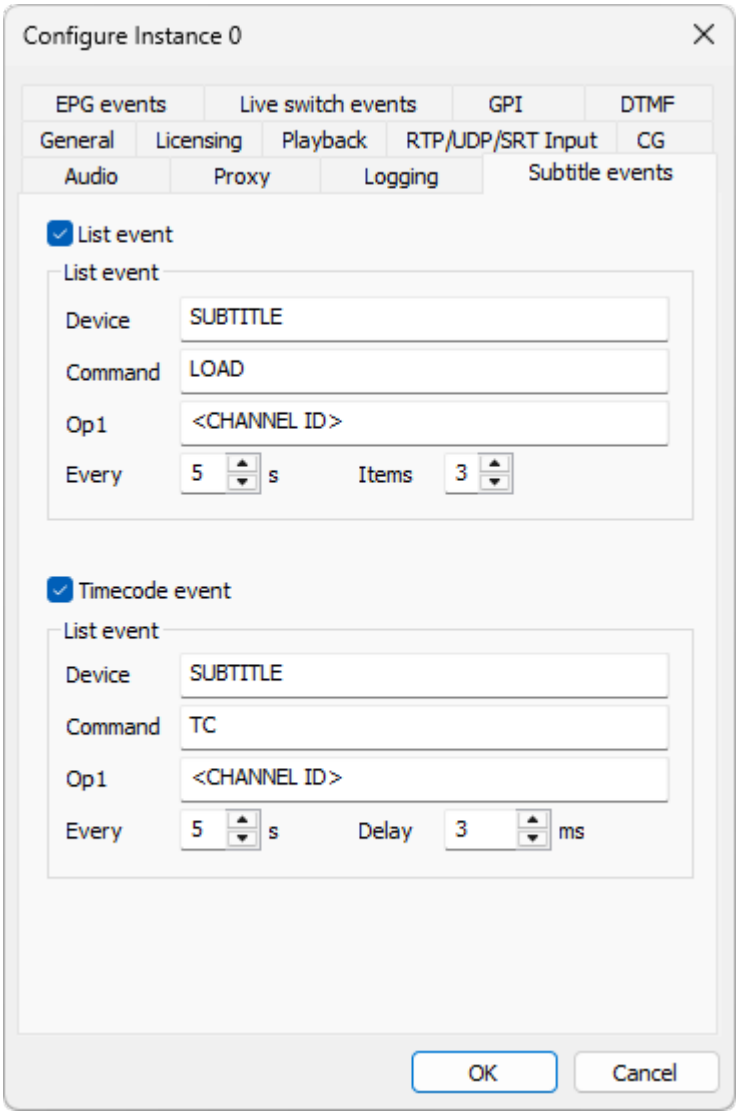
As well as distributing timecode, Cinegy Playout can also provide details of the current on-air item, as well as some number of currently cued items (along with their subtitle ID). This event, configurable as an interval-based event, provides subtitle systems with time to prepare for any subsequent playlist-oriented secondary events.

Subtitle control can be implemented by using Cinegy Subtitling Service or separate third-party plug-in (driven by the secondary events).



Refer to the dedicated API documentation about implementing Cinegy Playout event plug-ins.

The subtitles event generation is configurable via the "Subtitle events" tab:



The EPG event generation can be configured identically in the "EPG events" tab.

Select the "List event" option to enable configuration of event for updating the list of the next X items and indicating their status (on-air, cued), so that a subtitle system could load them in advance.

The "Device" and "Command" fields are filled with default values.

> In the "Device" field a supported third-party subtitle system name is defined. For instance, Polistream solution from Screen Systems.

In the "Op1" field, enter a unique channel ID in the following format: `CHANNELID=1`.

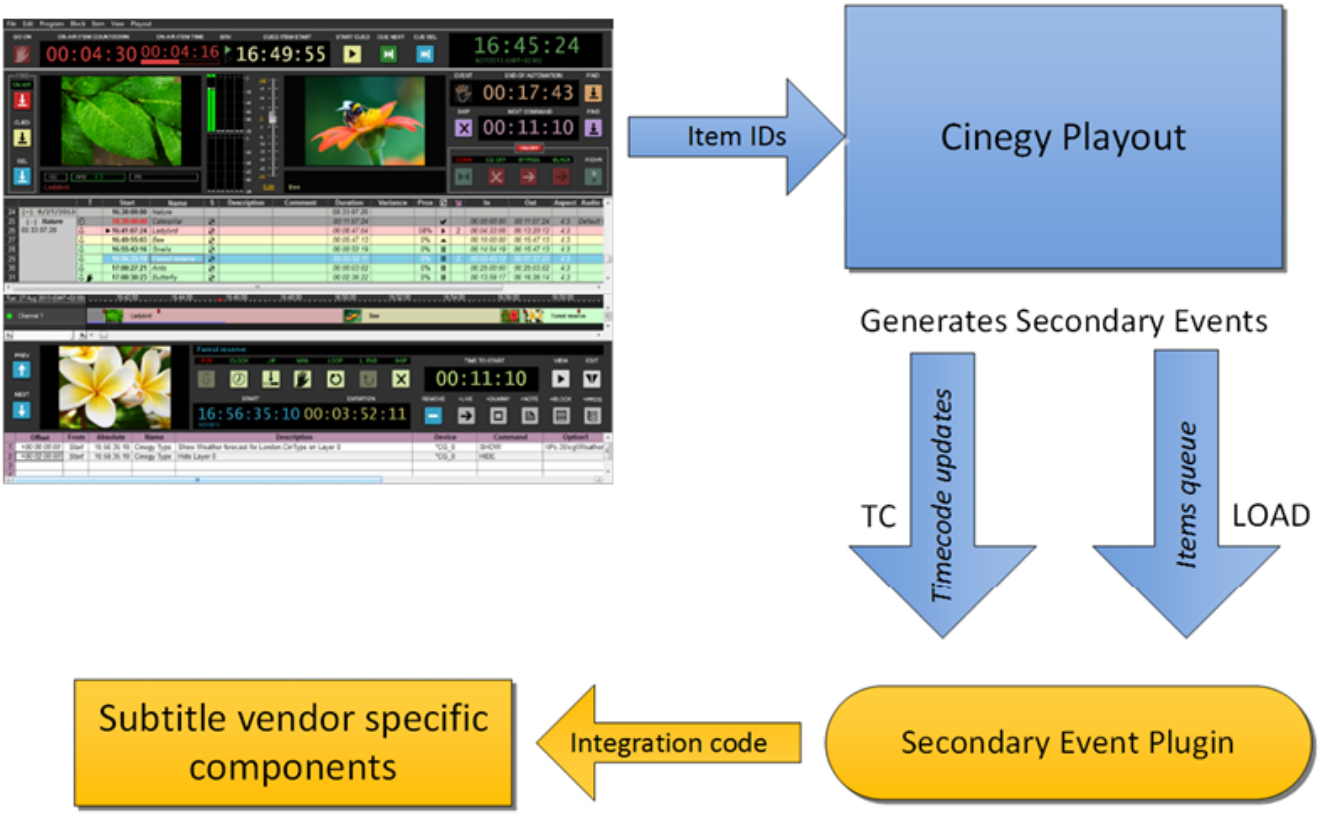
In the "Every" field, define the time interval for the event to be sent, in seconds.

In the "Items" field, define the "queue" size of the items.

Select the "Timecode event" option to enable the timecode event configuration for regular updates of the current item timecode. The configuration is similar to the "List event" configuration.

In the "Delay" field, define the timecode distribution delay in milliseconds. This parameter is used to compensate the constant delays, such as RTP buffering.

The diagram below shows how the components communicate:



Components marked as 'blue' impact the Cinegy changes; 'orange' should be delivered by the integrating subtitle partner.

Cinegy Air control application has an optional column in the playlist grid to define the subtitle ID value of each item. If this flag is not set (no subtitles required), an empty SubtitleID will be passed to the LOAD event.

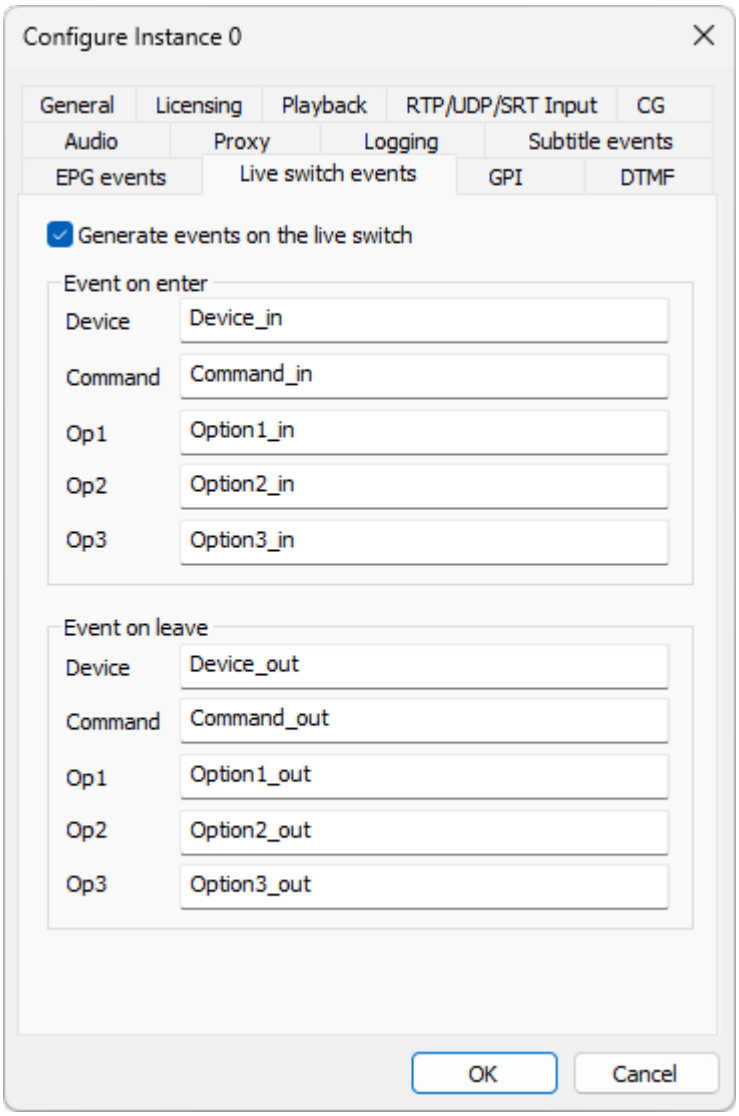
	Description	Comment	Duration	Variance	Proxy	☑		In	Out	Orig Asp	Targ Asp	Aud	Audio Mtx	Audio Enc	Traffic ID	Subtitle ID
1	Nature Program		04;11;46;23													
2			00;05;55;10	-00;05;53;18		✔	2	00;01;15;00	00;07;10;12	16:9	16:9	1	Default 8*			
3			00;07;30;04		0%	▶		00;00;00;00	00;07;30;04	16:9	16:9	1	Default 8*			
4			00;06;00;04		0%	▲		00;00;00;00	00;06;00;04	16:9	16:9	1	Default 8*			4867664
5			00;04;30;02		0%	⏸		00;00;00;00	00;04;30;02	16:9	16:9	1	Default 8*			4568745
6			00;08;10;11		0%	⏸		00;00;00;00	00;08;10;11	16:9	16:9	1	Default 8*			
7			00;08;30;04		0%	⏸		00;00;30;00	00;09;00;06	16:9	16:9	1	Default 8*			6894635
8			00;12;00;06			⏭		00;00;00;00	00;12;00;06	16:9	16:9	1	Default 8*			
9			00;15;00;02													
10																
11			00;07;45;07		0%	⏸		00;00;00;00	00;07;45;07	16:9	16:9	1	Default 8*			
12			00;10;30;04		0%	⏸	2	00;00;00;00	00;10;30;04	16:9	16:9	1	Default 8*			
13			00;30;00;14		0%	⏸		00;00;00;00	00;30;00;14	16:9	16:9	1	Default 8*			

If further commands are required for subtitle control, then the vendor may implement specific custom commands as secondary events, which may then control the subtitle server (e.g. explicit activation, hide options, enabling secondary languages, etc.).



You may also be interested in reading the following **post** to learn about automating on-air template data using a PowerShell script.

2.11 Live Switch Events



The "Live switch events" tab allows defining two scenarios for overlaying graphics objects on live items. Both of them are to be configured and managed via the Cinegy Playout configuration utility.

The first scenario is topical for Air PRO application live items added to the playlist.

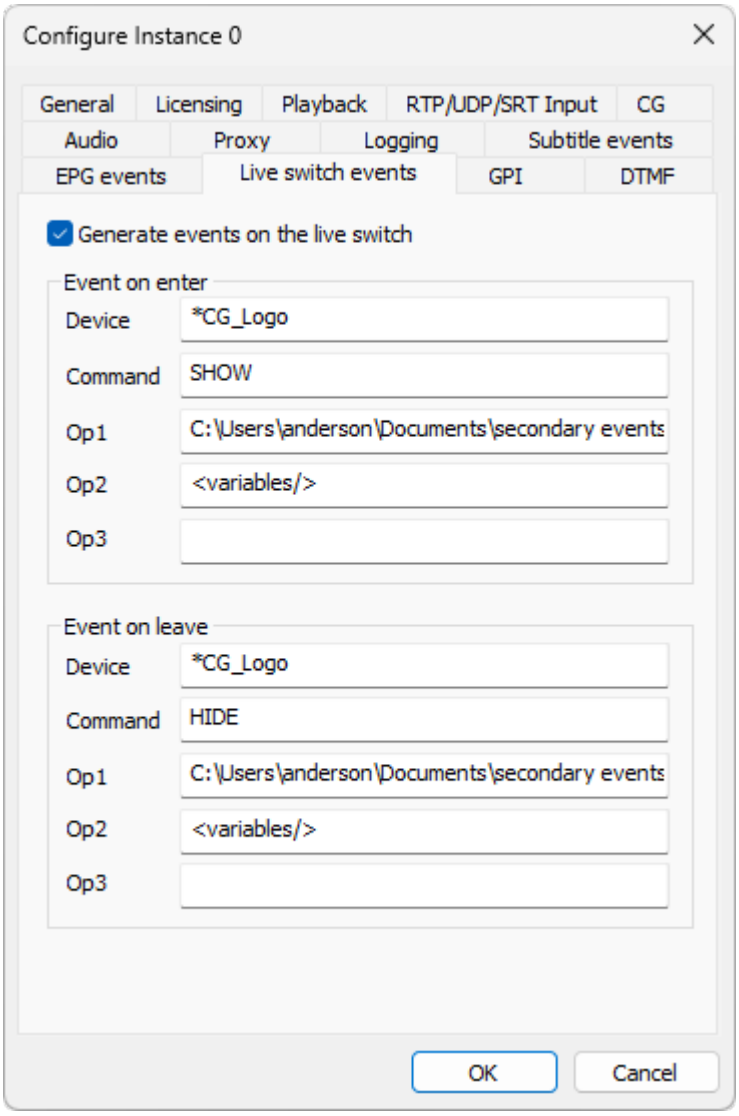


Refer to the **Live Item** paragraph within the **Cinegy Air Manual** to get more information on the playlist live items.

Select the "Generate events on the live switch" option to generate the enter (live item start) and leave (live item finish) events for Cinegy Air Control playlist live items. The following parameters should be set for both enter and leave events:

- device;
- command;
- options (1…3).

The parameters to be defined are similar to those configured via secondary events in the Cinegy Air PRO application:



Refer to the **Secondary Events** section within the **Cinegy Air Manual** to get more information on secondary events.

The second scenario is related to the Cinegy Playout application output live stream. It is possible to overlay the Cinegy Title graphics on the live feed immediately on its start.

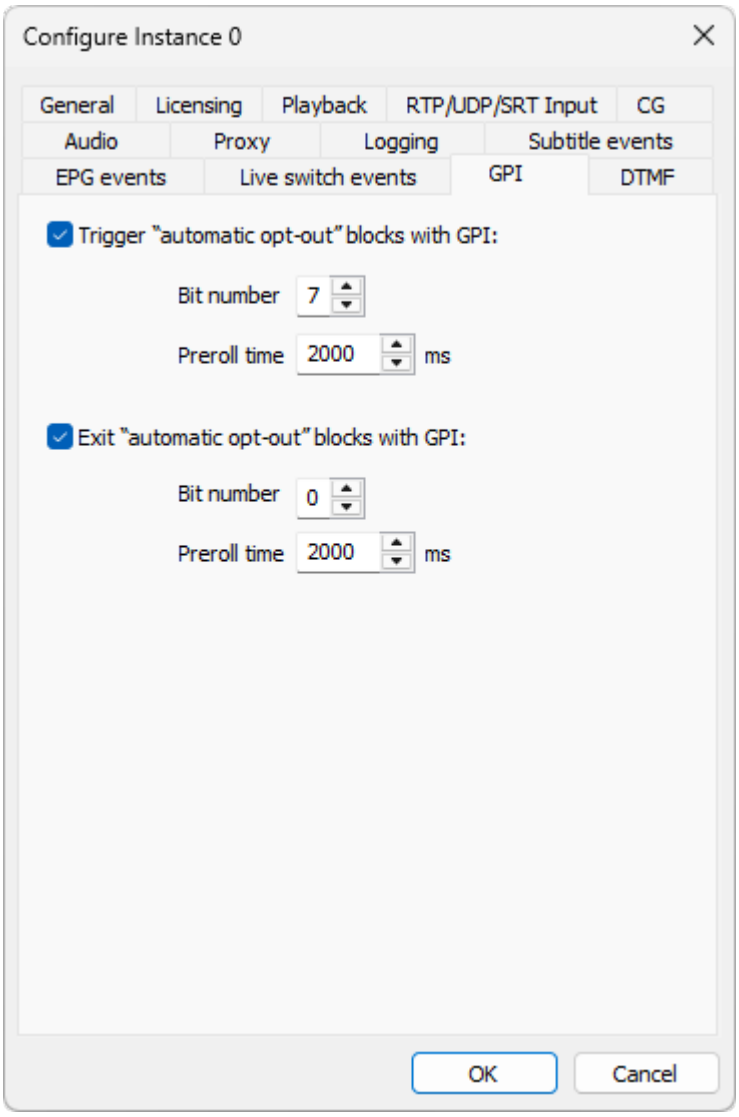
To set this scenario working, ensure that the "On start immediately switch to live" option is selected in the "General" tab settings.

Then select the "Generate events on the live switch" option and specify the required parameters in the "Event on enter" configuration window only.

2.12 GPI

You can set Cinegy Air to perform automatic program and commercials insertion or triggering via General Purpose Interface (GPI). For example, if you have third-party cuetone (DTMF or VBI) receiver/decoder with GPI output, you may automatically trigger Cinegy Air playlist blocks.

GPI Settings



Once the "Trigger automatic opt-out blocks with GPI" checkbox is selected and the GPI trigger is received, Cinegy Playout will start the next scheduled "Automatic Opt-out" block.

Here you can define the following GPI control parameters for the commercial block transferring:

- **Bit number** – defines the GPI device pin number used for Cinegy Air playlist "Automatic Opt-Out" block start;
- **Preroll time** – defines the delay between the time when GPI trigger received/detected and the time when it will be executed as playlist event to start "Automatic Opt-Out" block.

Once the "Exit automatic opt-out blocks with GPI" checkbox is selected and the GPI trigger is received, Cinegy Playout will jump to the next scheduled Live event.

- **Bit number** – defines the GPI device pin number used to exit from Cinegy Air playlist "Automatic Opt-Out" block;
- **Preroll time** – defines the delay between the time when GPI trigger received/detected and the time when it will be executed as playlist event to exit from "Automatic Opt-Out" block.

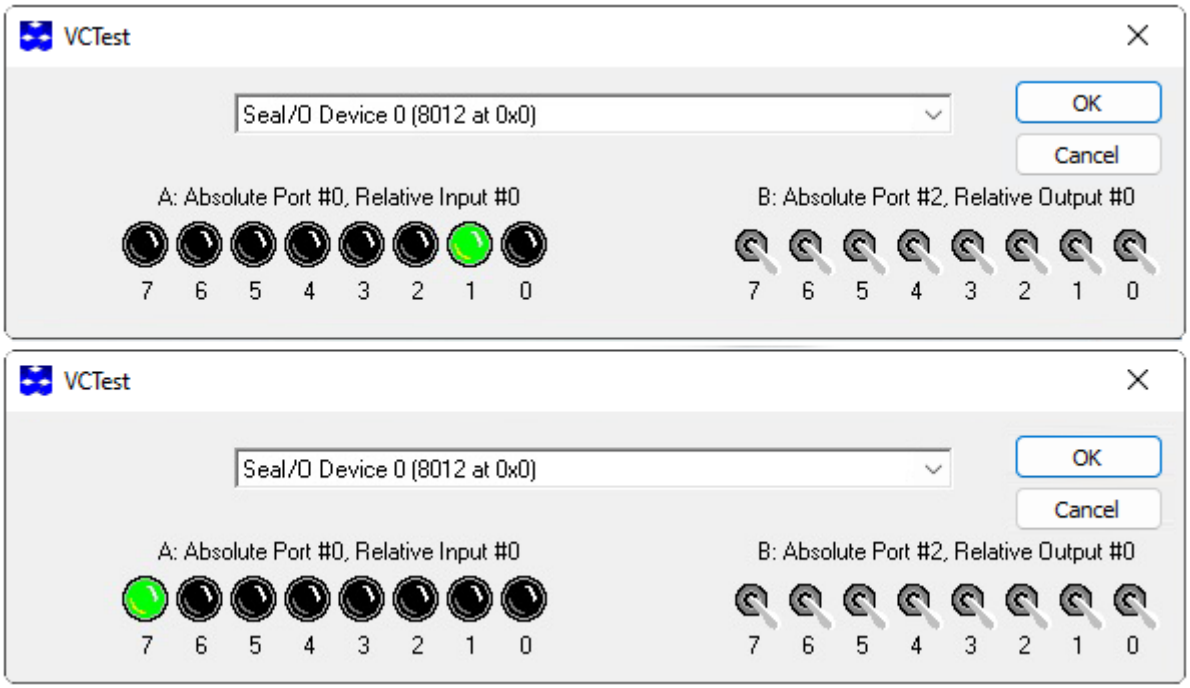


This feature is only available with a GPI card present in the playout server. Please refer to Cinegy Air System Recommendations for the list of supported GPI cards.

Sample Workflow

Following are the steps to set up the workflow of triggering "Automatic Opt-Out" blocks using GPI commands:

1. Make sure the GPI card is inserted on the server where Cinegy Playout is run and the SealO driver and software are installed.
2. Using SeaLevel VCTest tool, check the card sensing for voltage on corresponding pins to change bits status.



3. In the "GPI" tab of Cinegy Playout Configurator define the function for the Bit status changes. See the screenshot above: the Bit #7 status change will start "Automatic Opt-Out" block playback, the Bit #1 will trigger the exit from this block (and start the following "Normal" block playback).
4. Create the Cinegy Air playlist containing "Normal" and "Automatic Opt-Out" blocks.

> Refer to the **Automatic Opt-Out article** for more information on working with "Automatic Opt-Out" blocks.

5. Start the playlist playback by sending the "Normal" block on air. In any time change the Bit #7 status (by voltage on corresponding card pins) - the "Automatic Opt-Out" block will be triggered and it will go on air. During the "Automatic Opt-Out" playback change the Bit #1 status, the "Automatic Opt-Out" block playback will stop and the following "Normal" block playback will start.

2.13 DTMF

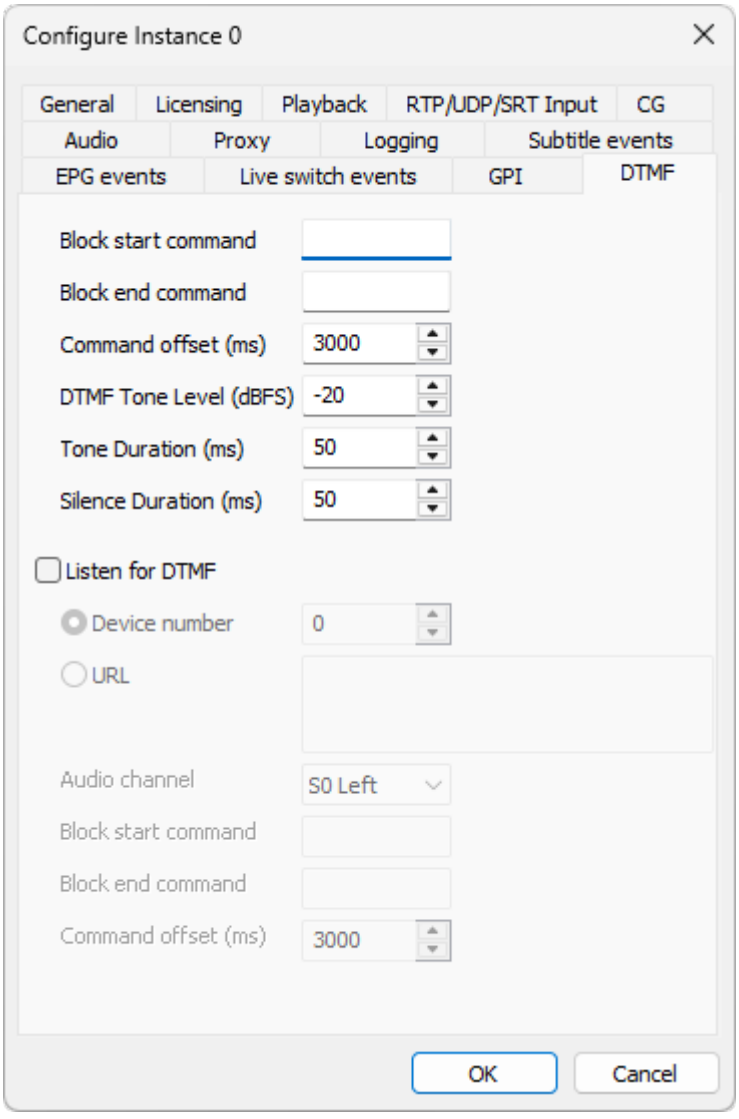
DTMF (Dual Tone Multi Frequency) tones are used to indicate the start and stop times of regional commercial insertion points.

DTMF was originally designed to be applied on silence or over voice only (for telephony). Cinegy's DTMF decoding is processed using the Goertzel algorithm, and also implements 2nd harmonic checks to separate DTMF from voice. However, there is no algorithm that can reliably decode DTMF signals applied over every possible background soundscape - for example, electronic music can easily generate false positives. Audio levels are also important, as well as the DTMF / background audio signal ratios as loud sound can destroy DTMF easily. Care and consideration should be used when relying on DTMF for critical triggers; instead, where possible more modern alternatives such as SCTE-35 should be used.

The DTMF tones used in broadcasting are strings of 4 characters. The first 3 characters are an unique channel identifier, and the 4th character is either * for entering the next commercial block or # for exiting the current commercial block.

The valid characters for the unique channel identifier are limited to: 0-9, A-D, *, #.

DTMF Settings

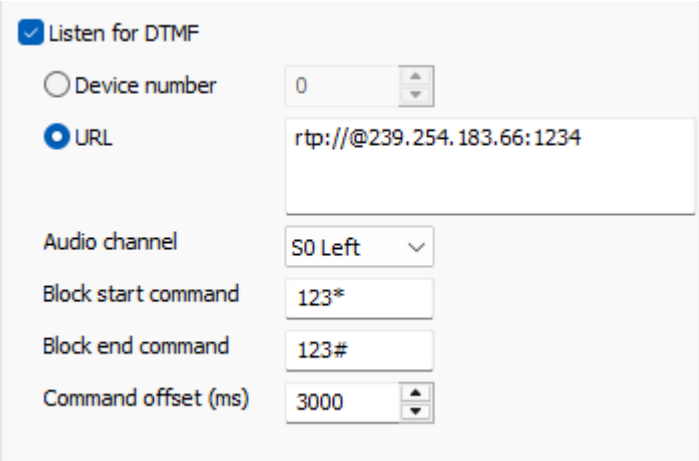


For the output signal, the following parameters should be configured:

- **Block start command** – specifies the command for automatic opt-out block start.
- **Block end command** – specifies the command for automatic opt-out block end.
- **Command offset** – defines the offset for DTMF triggers from the start of the automatic opt-out block.
- **DTMF Tone Level** – specifies the DTMF tone volume, in dBFS.

- **Tone Duration** – defines the DTMF tone duration, in ms.
- **Silence Duration** – defines the pause between DTMF tones, in ms.

For DTMF tone receiving, the "Listen for DTMF" option should be selected:



Choose the type of incoming audio source – input device (NDI, SDI, Shared RAM, etc.) or IP – by selecting the "Device number" or "URL" radio button respectively, and then configure the following parameters:

- **Device number** – define the input device number.
- **URL** – define the URL of the incoming IP stream.
- **Audio channel** – select the audio channel containing DTMF tones from the drop-down list.
- **Block start command** – specify the command for automatic opt-out block start.
- **Block end command** – specify the command for automatic opt-out block end.
- **Command offset** – define the offset for DTMF triggers from the start of the commercial block.

Any changes to the DTMF settings should be made before the particular item becomes cued; otherwise, the DTMF settings will not be applied for this item.

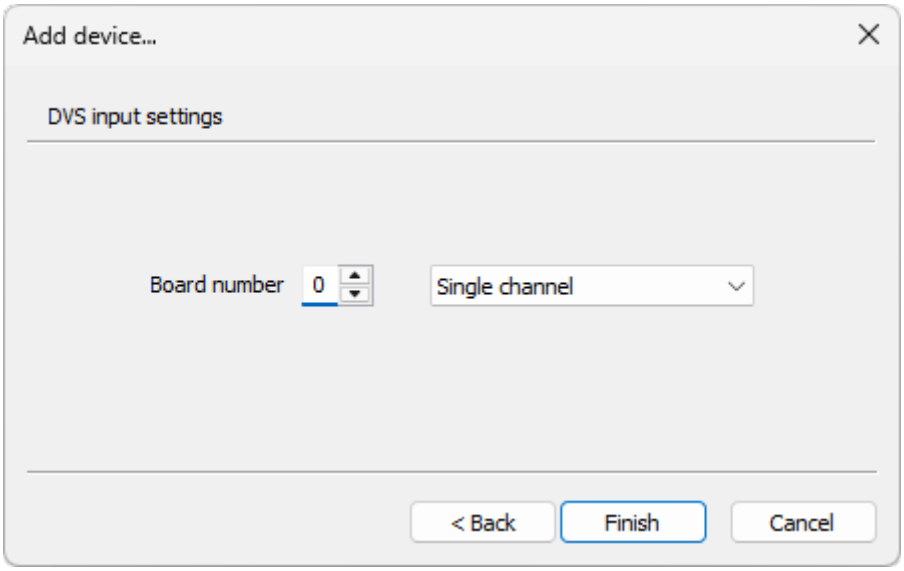
Chapter 3 Playback Device Settings

3.1 Input Devices

- DVS Input
- DeckLink Input
- AJA Input
- AJA IP 2022-6/7 Input
- AJA IP 2110 Input
- Deltacast Input
- Deltacast IP 2022-6/7 Input
- ForA HVS-100TB2 Input
- Shared RAM Input
- NDI Input
- WDM Input
- WebCam Input
- Audio Input

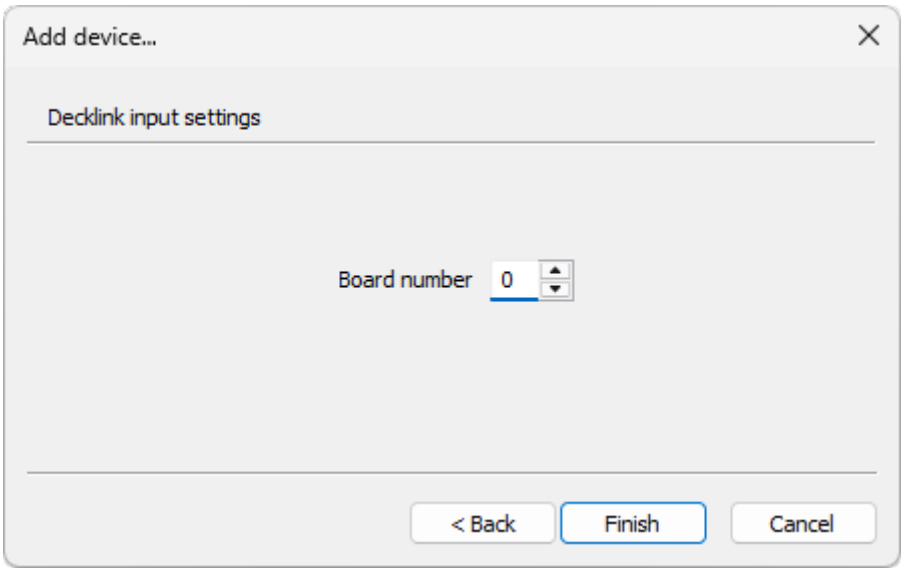
For the list of supported video boards refer to **Cinegy Air System Recommendations**.

DVS Input



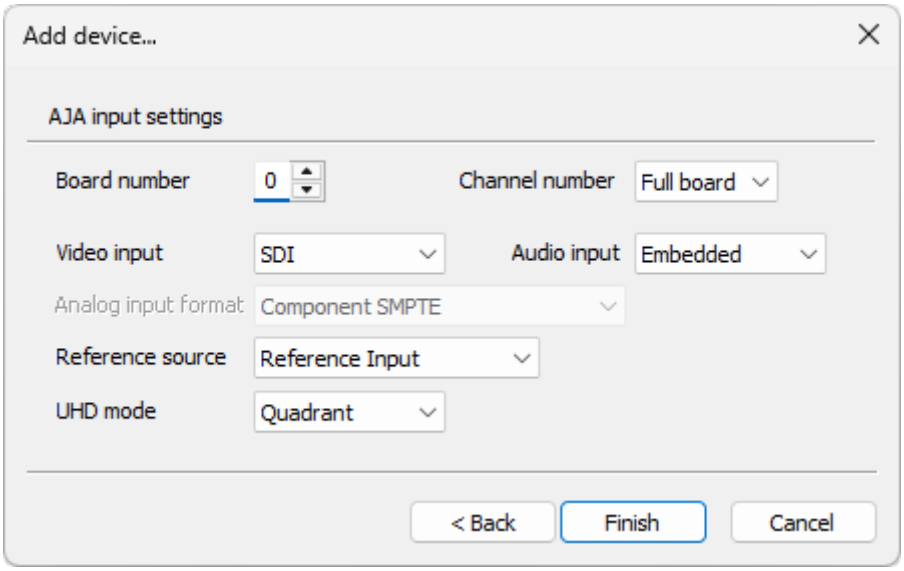
Define the board number from 0 to 9 and the channel mode. Press the "Finish" button to set the DVS input device.

DeckLink Input



Define the board number from 0 to 15 and press the "Finish" button to set the DeckLink input device.

AJA Input



The following AJA input settings can be configured here:

- **Board number** – define the board number from 0 to 7.
- **Channel number** – use the drop-down list to select the channel number.
- **Video input** – define the video input type by choosing SDI, Analog, HDMI or SDI 2 from the drop-down list.
- **Audio input** – define the audio input type by choosing Embedded, AES, Analog or HDMI from the drop-down list.
- **Analog input format** – choose the appropriate analog video input format from the drop-down list for the analog video input signal.

  The analog input format can be specified only when the analog video input is selected.

- **Reference source** – define the reference source for the AJA input device by choosing between Reference Input, Video Input or Free Run from the drop-down list.

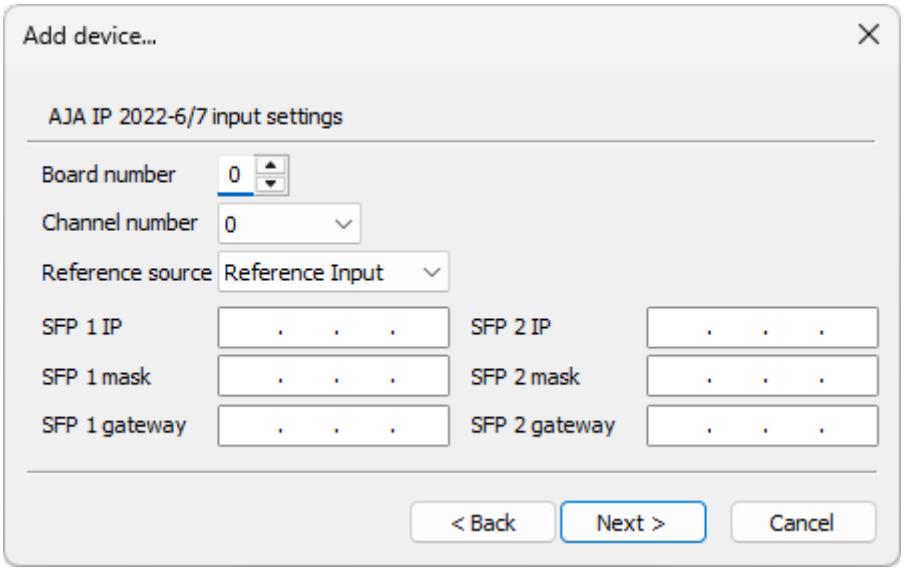
- **UHD mode** – select the required UHD SDI mapping mode by choosing between Quadrant or 2SI options from the drop-down list.

> Refer to the AJA Output device configuration description for more information on UHD SDI mapping modes.

Press "Finish" to complete the setup and assign the AJA as an input device for the current channel.

AJA IP 2022-6/7 Input

AJA IP 2022-6/7 Input Settings

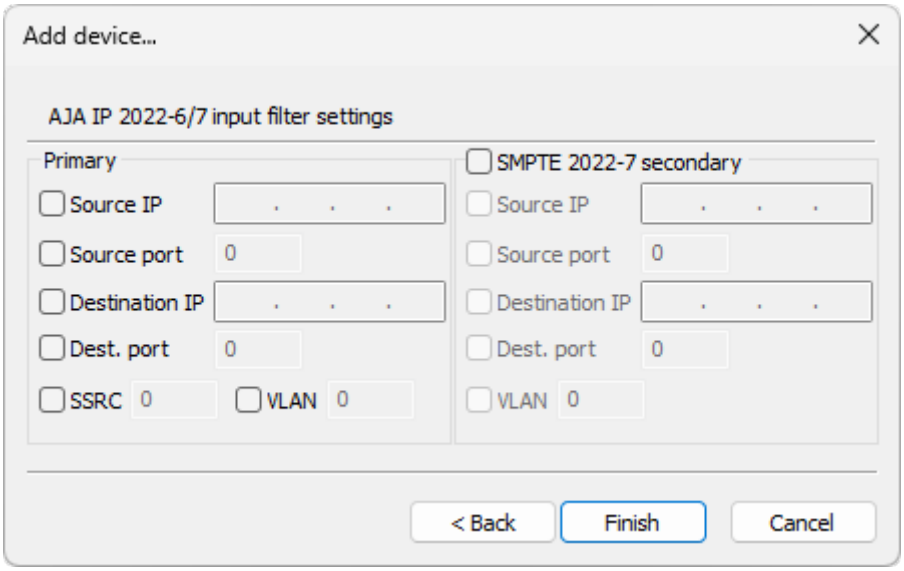


In the first tab define the following settings:

- **Board number** – define the board number from 0 to 7.
- **Channel number** – use the drop-down list to select the channel number from 0 to 7.
- **Reference source** – define the reference source for the AJA IP input device by choosing between Reference Input, IP Input or Free Run from the drop-down list.
- **SFP 1 IP** – specify the SFP 1 IP address.
- **SFP 1 mask** – enter the SFP 1 subnet mask.
- **SFP 1 gateway** – specify your SFP 1 gateway address.

> The "SFP 2" settings are similar to those defined for "SFP 1".

AJA IP 2022-6/7 Input Filter Settings



Check the options below to define the needed parameters:

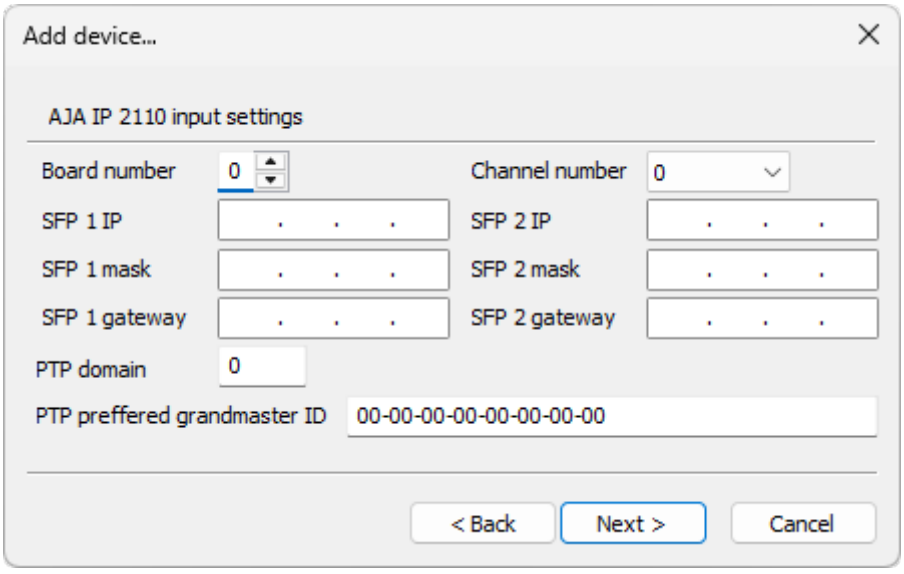
- **Source IP** – define the source IP address.
- **Source port** – define the source port number.
- **Destination IP** – enter the destination IP address.
- **Destination port** – enter the destination port number.
- **SSRC** – define the unique synchronization source.
- **VLAN** – define the VLAN interface number.

Select the "SMPTE 2022-7 secondary" checkbox to specify the secondary port parameters.

Once the settings are set up, press the "Finish" button for the changes to be applied.

AJA IP 2110 Input

AJA IP 2110 Input Settings



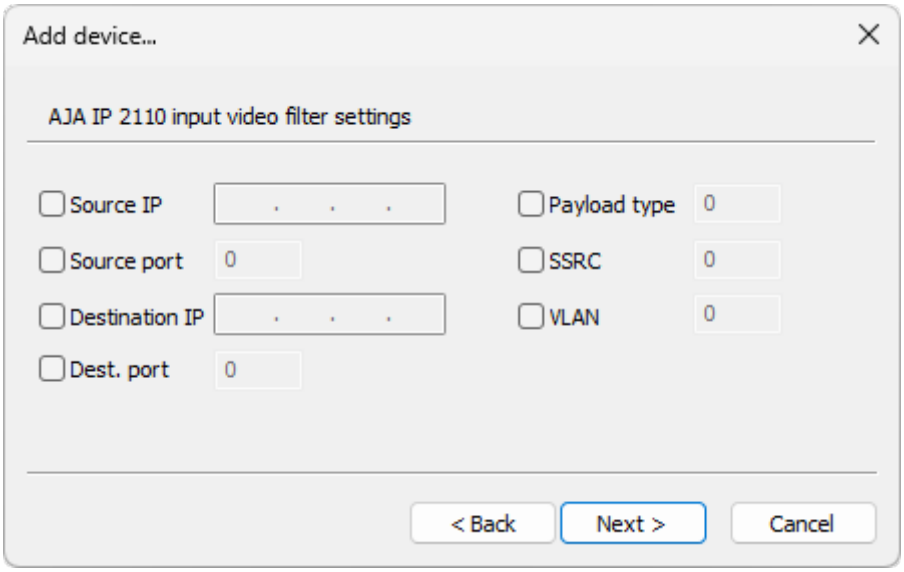
In the first tab define the following settings:

- **Board number** – define the board number from 0 to 7.
- **Channel number** – use the drop-down list to select the channel number from 0 to 7.
- **SFP 1 IP** – specify the SFP 1 IP address.
- **SFP 1 mask** – enter the SFP 1 subnet mask.
- **SFP 1 gateway** – specify your SFP 1 gateway address.

> The "SFP 2" settings are similar to those defined for "SFP 1".

- **PTP domain** – specify the ID of the PTP Source Port.
- **PTP preferred grandmaster ID** – define preferred ID of the PTP Grandmaster.

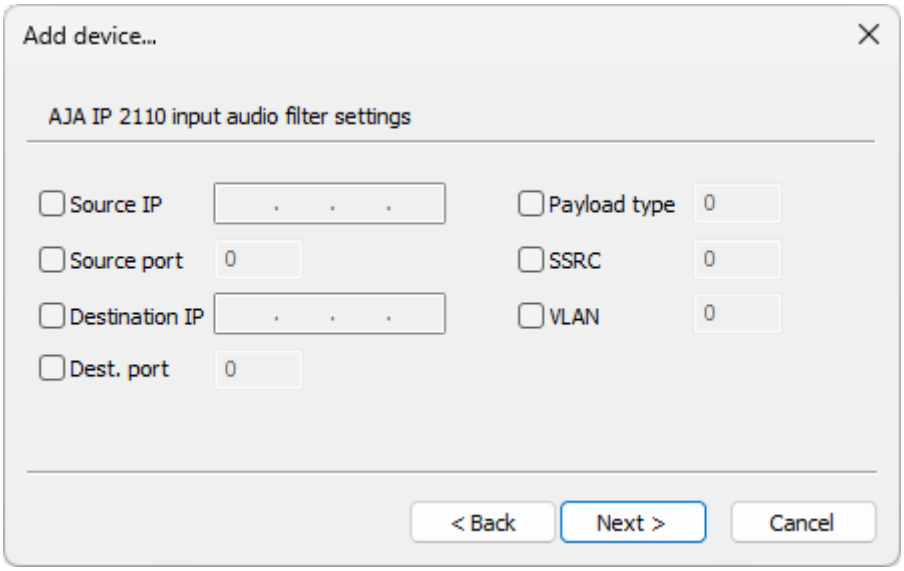
AJA IP 2110 Input Video Filter Settings



Check the options below to define the needed parameters:

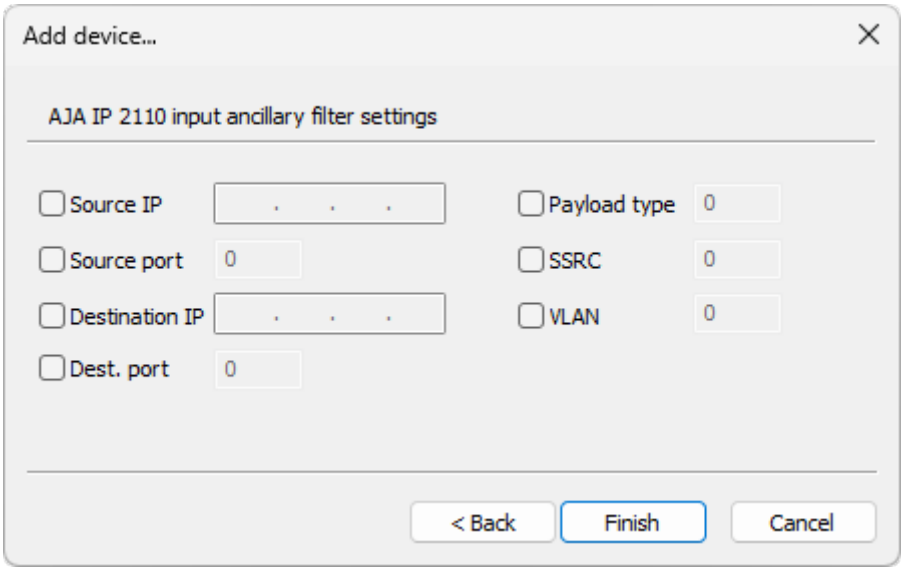
- **Source IP** – define the source IP address.
- **Source port** – define the source port number.
- **Destination IP** – enter the destination IP address.
- **Dest. port** – enter the destination port number.
- **Payload type** – define the payload type value.
- **SSRC** – define the unique synchronization source.
- **VLAN** – define the VLAN interface number.

AJA IP 2110 Input Audio Filter Settings



The AJA IP 2110 input audio filter settings are identical to the video filter setting available in the previous step.

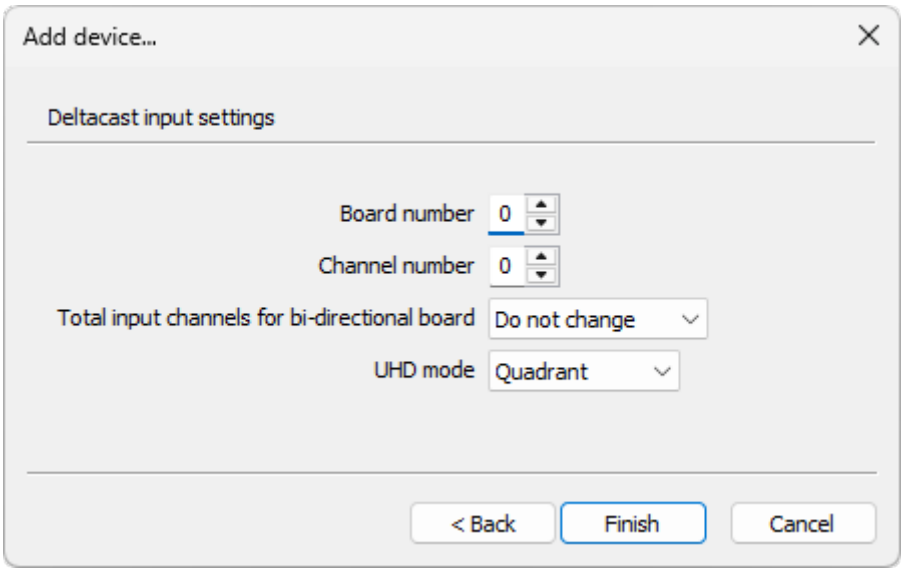
AJA IP 2110 Input Ancillary Filter Settings



The AJA IP 2110 input ancillary filter settings are identical to the video filter setting described in the step above.

Once the settings are set up, press the "Finish" button for the changes to be applied.

Deltacast Input



The following Deltacast input settings can be configured here:

- **Board number** – define the board number from 0 to 7.
- **Channel number** – define the channel number from 0 to 7.
- **Total input channels for bi-directional board** – use the drop-down list to define the total number of input channels. The "Do not change" option means that the previously configured input and output channels division will be preserved.

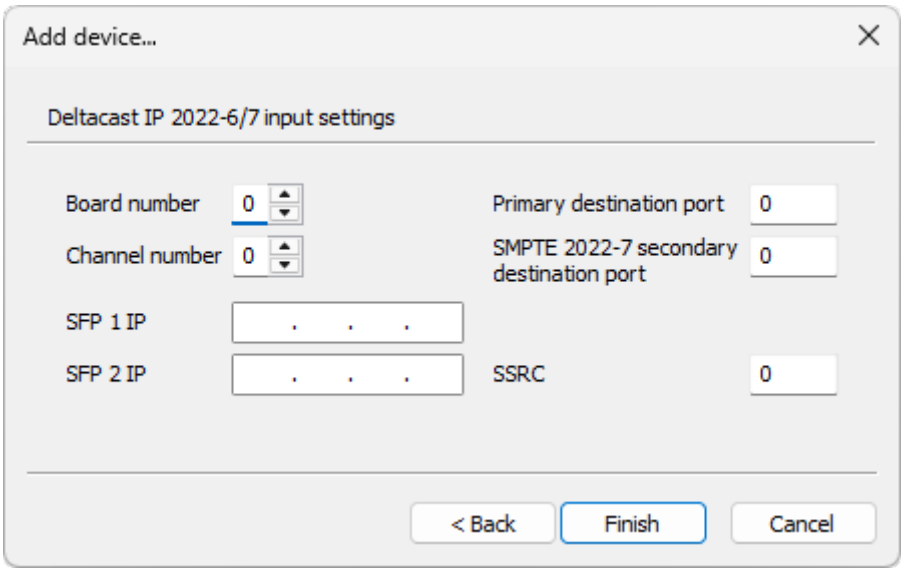
  This setting is only topical for the new generation versatile Deltacast cards that support channels direction configuration.

- **UHD mode** – select the required UHD SDI mapping mode by choosing between Quadrant or 2SI options presented in the drop-down list.

  Refer to the Deltacast Output device configuration description for more information on UHD SDI mapping modes.

Press "Finish" to complete the setup and assign Deltacast as the output device for the current channel.

Deltacast IP 2022-6/7 Input

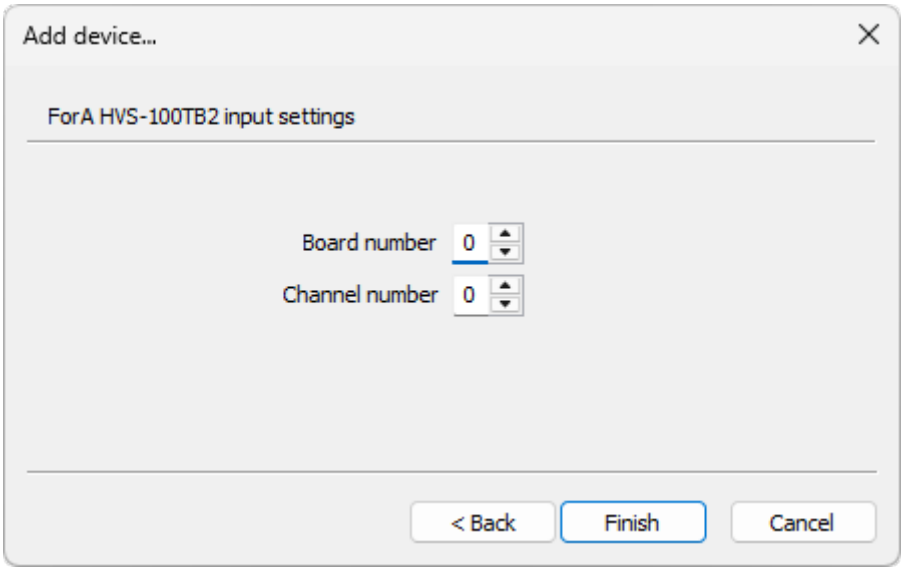


Here define the following Deltacast IP input settings:

- **Board number** – define the board number from 0 to 7.
- **Channel number** – define the channel number from 0 to 7.
- **SFP 1 IP** – specify the SFP 1 IP address.
- **SFP 2 IP** – specify the SFP 2 IP address.
- **Primary destination port** – enter the destination port number.
- **SMPTE 2022-7 secondary destination port** – specify secondary destination port number used in case packets are lost in any of the paths.
- **SSRC** – define the unique synchronization source.

Press the "Finish" button to apply the settings.

ForA HVS-100TB2 Input

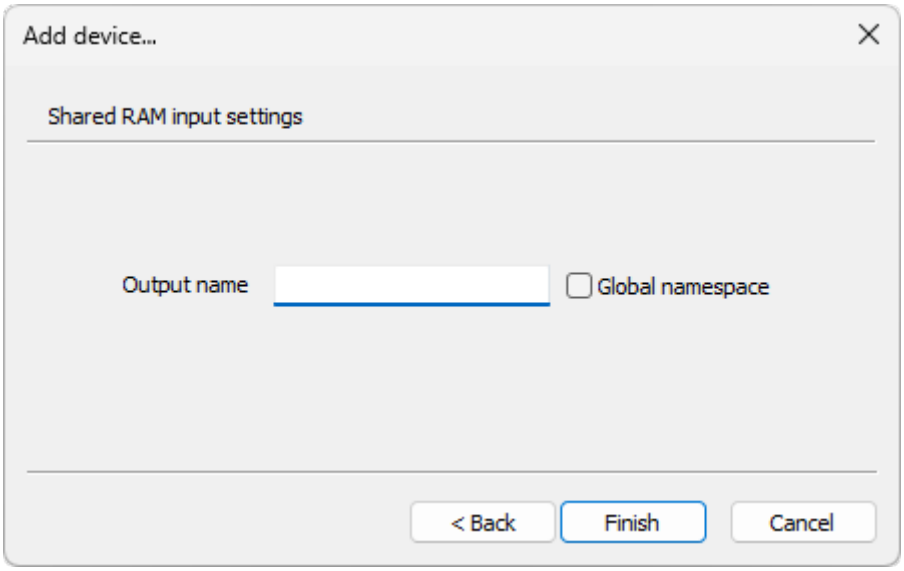


Define the board number from 0 to 7 and channel number from 0 to 4 for the ForA HVS-100TB2 input device.

Press "Finish" to apply the changes.

Shared RAM Input

The Shared RAM input can be used to receive a live uncompressed stream from another Cinegy application installed on the same machine, e.g. Cinegy Live or another Cinegy Playout instance.



The following Shared RAM input settings can be configured here:

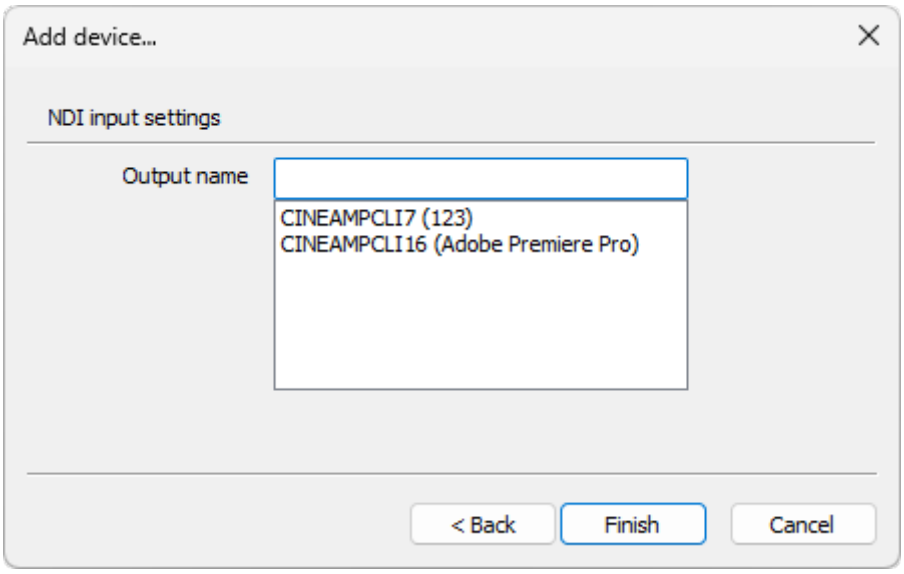
- **Output name** – use the keyboard to specify a name for your output device to be used as a receiver.
- **Global namespace** – check the option to enable sharing between several users on the machine or between applications and services.

Press the "Finish" button to apply the settings.

NDI Input

Support for NDI is an optional feature requiring additional licensing.

NDI Input is used to capture media stream from an NDI compatible source connected to a local network.



Configure the following NDI input settings:

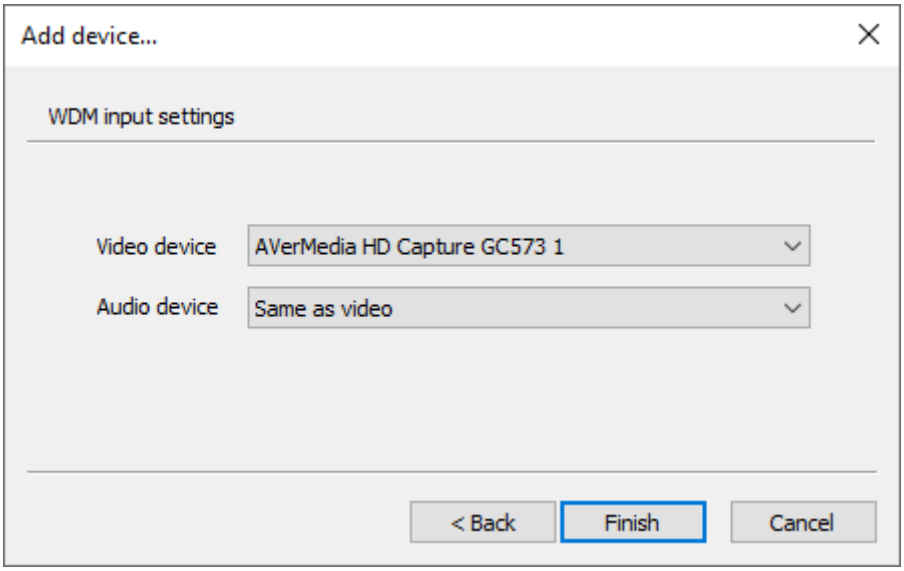
- **Output name** – specify a name for your output device to be used as a receiver.

Press the "Finish" button to apply the settings.

WDM Input

WDM Input is used for receiving a signal from a semi-professional capture boards which support the interlace signal and can have several inputs.

The WDM input device is provided strictly for experimental purposes, i.e. very intensive testing is required prior to any live application.



Configure the following WDM input settings:

- **Video device** – choose the appropriate input device from the drop-down list.
- **Audio device** – choose the corresponding input audio device from the drop-down list.

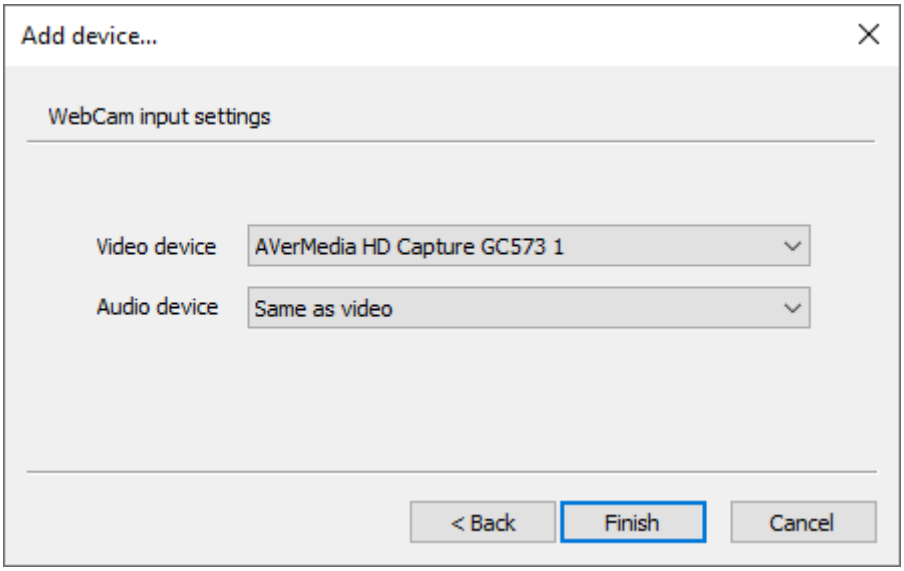
The "Video device" and "Audio device" lists depend on the hardware installed on the current PC.

Press the "Finish" button to apply the settings.

WebCam Input

The WebCam input device is used for receiving a signal from a Web camera.

The WebCam input device is provided strictly for experimental purposes, i.e. very intensive testing is required prior to any live application.



Configure the following WebCam input settings:

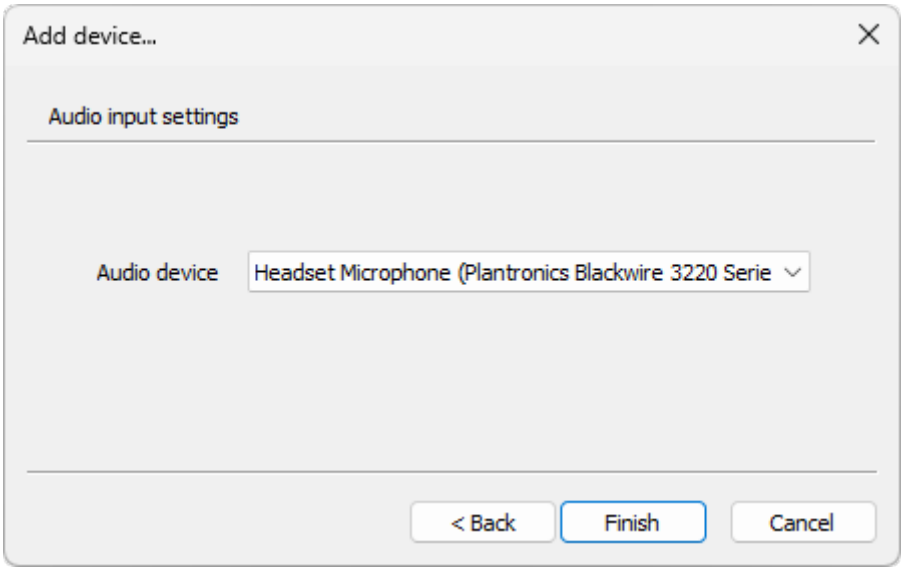
- **Video device** – choose the appropriate input device from the drop-down list.
- **Audio device** – choose the corresponding input audio device from the drop-down list.

The "Video device" and "Audio device" lists depend on the hardware installed on the current PC.

Press the "Finish" button to apply the settings.

Audio Input

The audio input device is used for receiving an audio signal.



Define the input audio device from the drop-down list of available connected devices. Press the "Finish" button to set the audio input device.

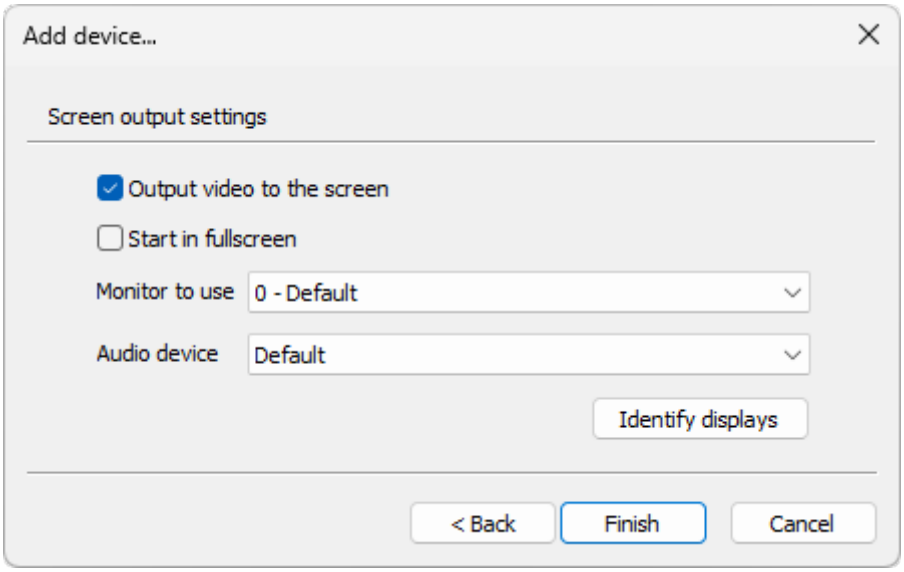
3.2 Output Devices

- Screen Output
- DVS Output

- Decklink Output
- AJA Output
- AJA IP Output
- Deltacast Output
- Deltacast IP Output
- ForA HVS-100TB2 Output
- RTP/UDP/SRT Output
- Shared RAM Output
- NDI Output

For the list of supported video boards refer to the **Cinegy Air System Recommendations**.

Screen Output



Here define the following settings:

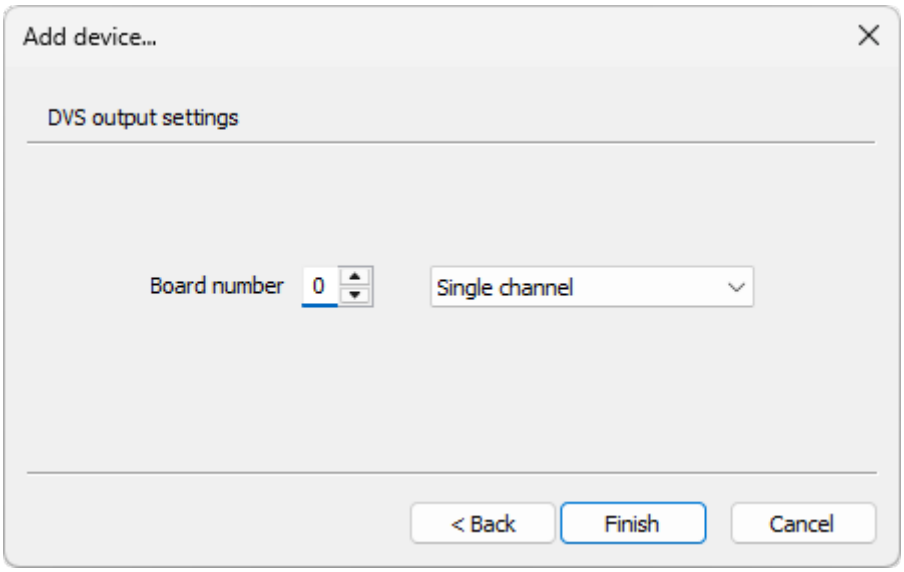
- **Output video to the screen** – select the checkbox for the video to be put out to the screen.
- **Start in fullscreen** – select the checkbox for the video to be put out in full-screen mode.
- **Monitor to use** – choose the required monitor to be used from the drop-down list.
- **Audio device** – choose the corresponding output audio device from the drop-down list.

Identify displays — Press the "Identify displays" button to detect and identify the additional monitor connected.

The "Monitor to use" and "Audio device" lists depend on the hardware installed on the current PC.

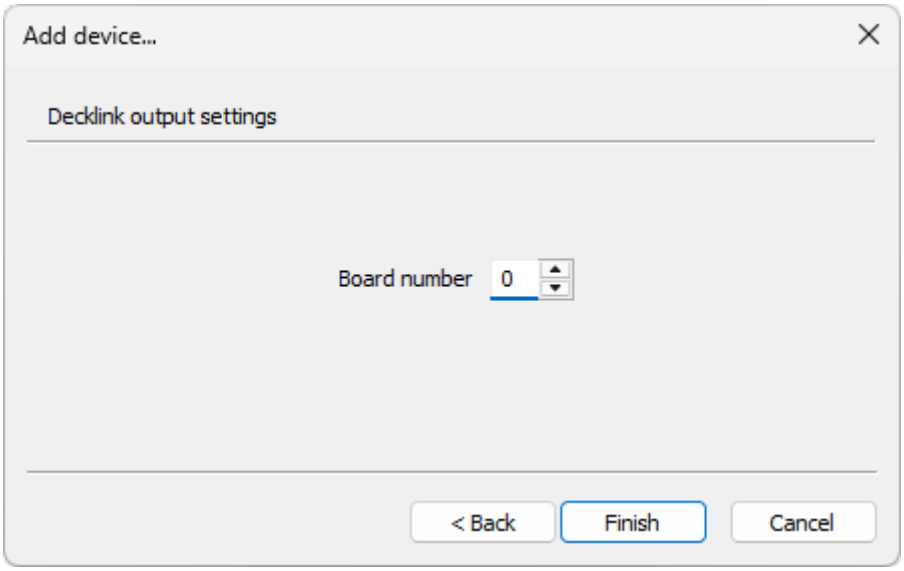
If the "Output video to the screen" option is unchecked, only audio will be broadcast without video (over the radio stations, for example).

DVS Output



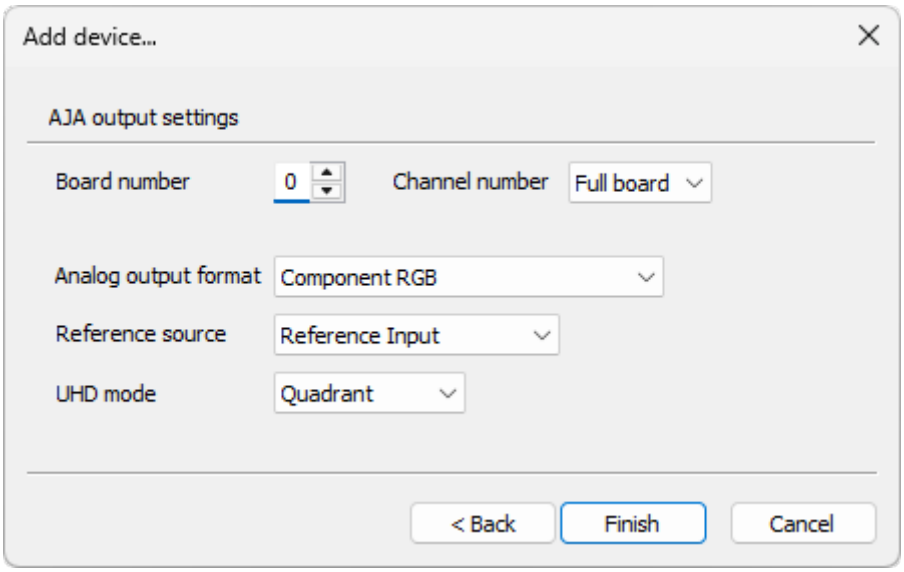
Here define the board number from 0 to 9 and channel mode. Press the "Finish" button to set the DVS output device.

DeckLink Output



Here define the board number from 0 to 15 and press "Finish" to set the DeckLink output device.

AJA Output



The following AJA output settings can be configured here:

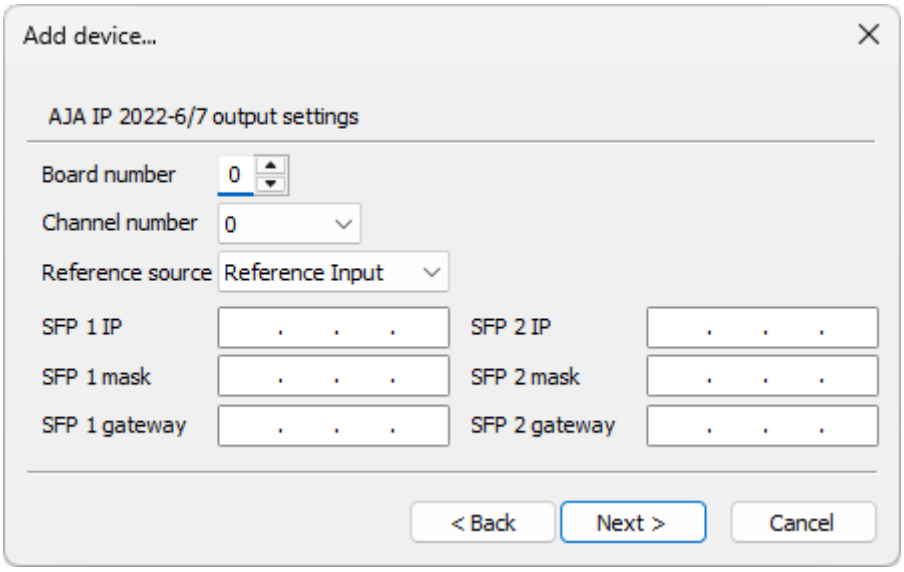
- **Board number** – define the board number from 0 to 7.
- **Channel number** – use the drop-down list to select the channel number.
- **Analog output format** – choose the appropriate analog video output format from the drop-down list for the analog video output signal.
- **Reference source** – define the reference source for the AJA output device by choosing between Reference Input, SDI Input or Free Run from the drop-down list.
- **UHD mode** – select the required UHD SDI mapping mode by choosing between Quadrant or 2SI options from the drop-down list.

	Only multichannel 3G boards are supported for UHD SDI mapping modes.
	Please note that using double-rate (p50 and p60) UHD formats requires four cables a(4x 3G) for both modes. For single-rate (p25 and p30) UHD formats four cables (4x 1,5G) are needed in Quad-link SDI - Square Division mode, whereas in 2SI mode two cables (2x 3G) are needed.
	Selecting UHD2160 TV format for 8-channel boards (DELTA-3G-elp-d 8c and Corvid88) is always subdivided for two UHD channels (0 and 1) in both SDI UHD mapping modes, even if single-rate (p25 and p30) UHD formats are used (2 connectors on each channels are free) the rest of connectors are not usable. It is possible to mix different SDI UHD mapping modes within one card (for example use Corvid88 or DELTA-3G-elp-d 8c) as UHD Quad Link SDI input device and UHD 2SI SDI output device simultaneously.

Press "Finish" to complete the setup and assign AJA as the output device for the current channel.

AJA IP Output

AJA IP Output Settings

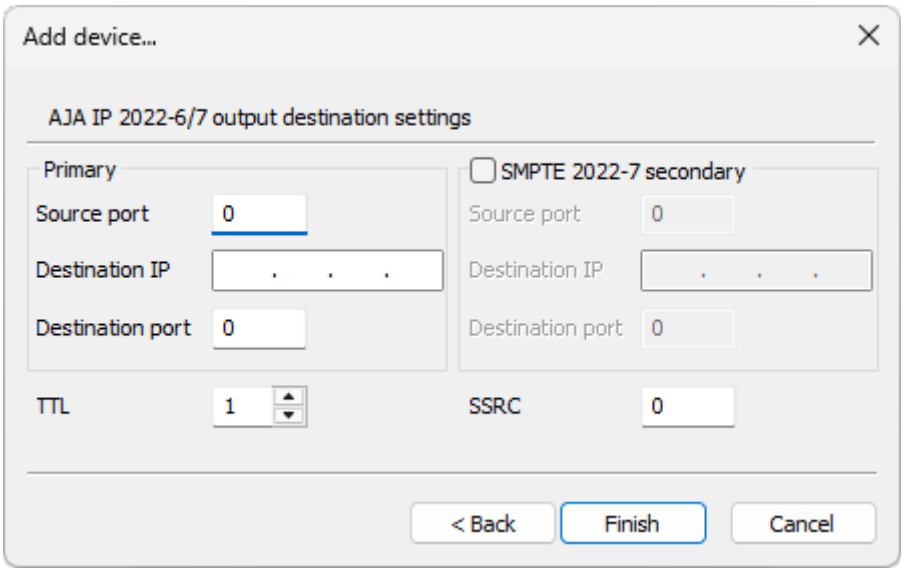


The following AJA IP output settings can be configured here:

- **Board number** – define the board number from 0 to 7.
- **Channel number** – use the drop-down list to select the channel number from 0 to 7.
- **Reference source** – define the reference source for the AJA IP output device by choosing between Reference Input, IP Input or Free Run from the drop-down list.
- **SFP 1 IP** – define the appropriate SFP 1 IP address.
- **SFP 1 mask** – enter the SFP 1 subnet mask.
- **SFP 1 gateway** – specify your SFP 1 gateway address.

"SFP 2" settings are similar to those defined for "SFP 1".

AJA IP Output Destination Settings



Check the options below to define the needed parameters:

- **Source port** – define the source port number.
- **Destination IP** – enter the destination IP address.
- **Destination port** – enter the destination port number.
- **TTL** – defines time-to-live for transmission of relay packets, used to control the number of router hops a packet is permitted to make before being dropped.

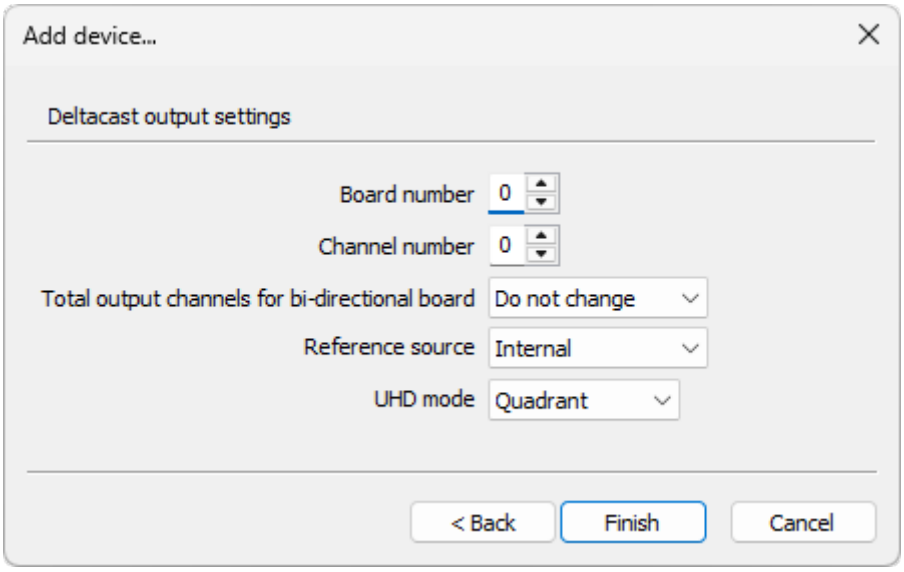
> Refer to the network technical documentation for more information on the TTL option.

- **SSRC** – define the unique synchronization source.

Select the "SMPTE 2022-7 secondary" checkbox to specify the secondary port parameters.

Once the settings are set up, press the "Finish" button for the changes to be applied.

Deltacast Output



The following Deltacast output settings can be configured here:

- **Board number** – define the board number from 0 to 7.
- **Channel number** – define the channel number from 0 to 7.
- **Total output channels for bi-directional board** – use the drop-down list to define the total number of output channels. The "Do not change" option means that the previously configured input and output channels division will be preserved.

> This setting is only topical for the new generation versatile Deltacast cards that support channels direction configuration.

- **Reference source** – choose the reference source for the Deltacast output device from the drop-down list.
- **UHD mode** – select the required UHD SDI mapping mode by choosing between Quadrant, 2SI, or 6/12G options presented in the drop-down list.

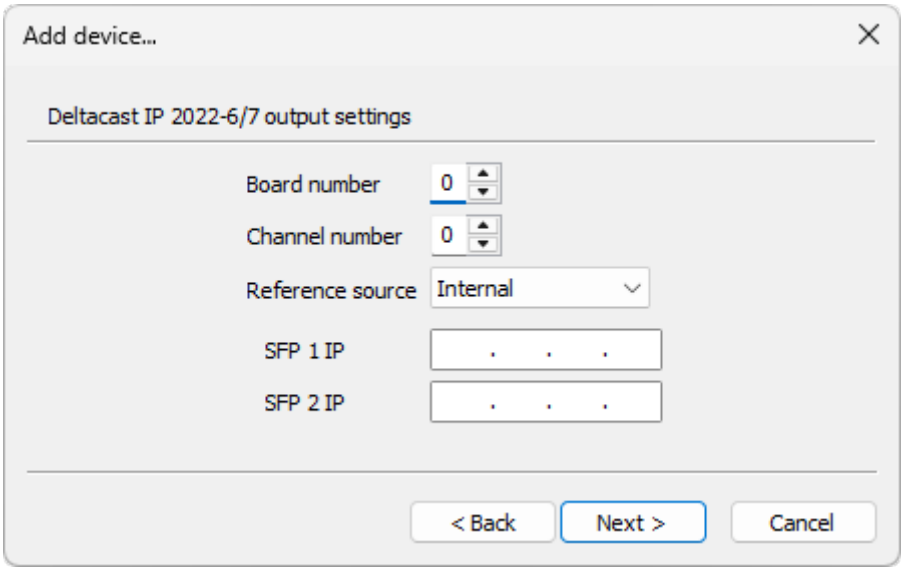
> Refer to the AJA Output device configuration description for more information on UHD SDI mapping modes.

Press "Finish" to complete the setup and assign Deltacast as the output device for the current channel.

If the wrong version of Deltacast board driver is installed, the playout engine will not run. In Activity Log there will be the following error message: `ERROR: Cannot initialize playout. Code = 0x8007007F`.

Deltacast IP Output

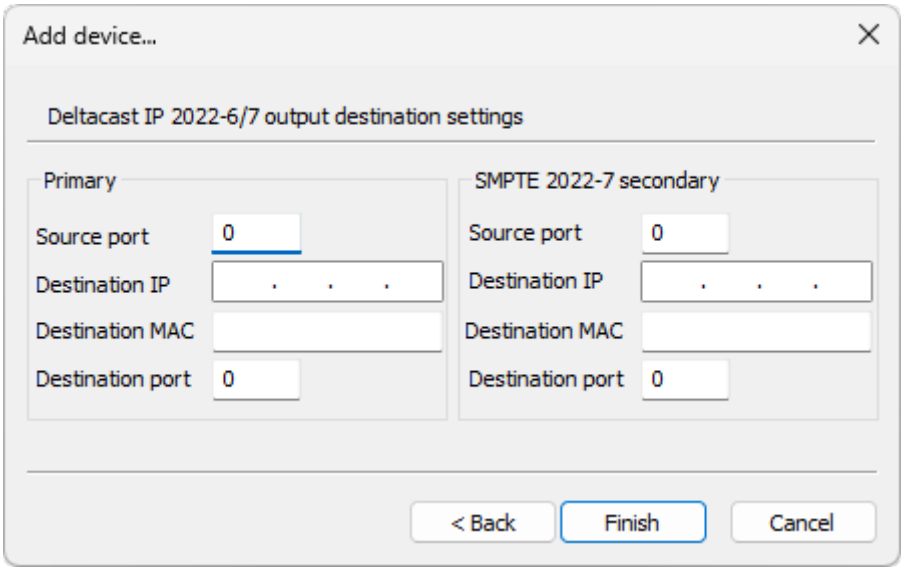
Deltacast IP Output Settings



In the first tab define the following Deltacast IP output settings:

- **Board number** – define the board number from 0 to 7.
- **Channel number** – define the channel number from 0 to 7.
- **Reference source** – define the reference source for the Deltacast IP output device by choosing between "Internal" and "External" from the drop-down list.
- **SFP 1 IP** – define the appropriate SFP 1 IP address in the address field.
- **SFP 2 IP** – define the appropriate SFP 2 IP address in the address field.

Deltacast IP Output Destination Settings



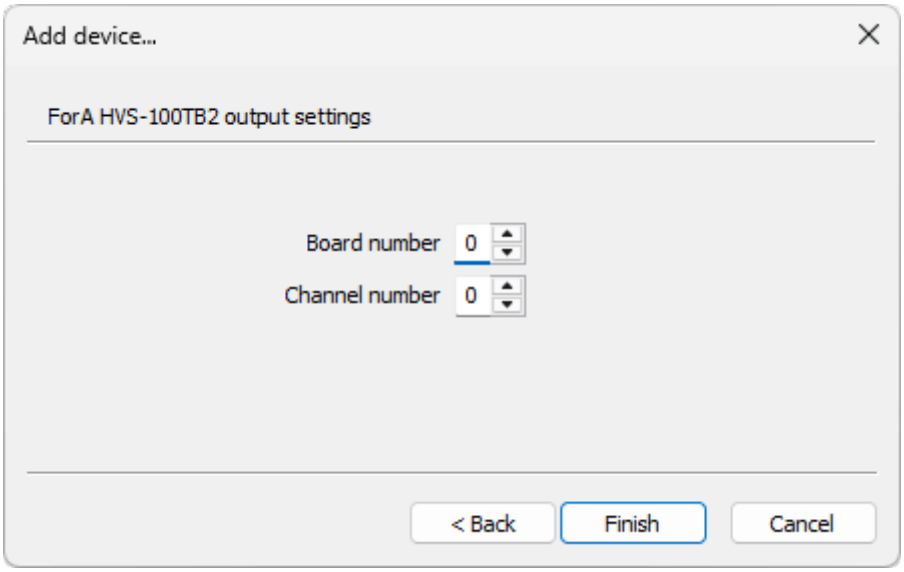
The following Deltacast IP output destination settings can be configured here:

- **Source port** – define the source port number.
- **Destination IP** – enter the destination IP address.
- **Destination MAC** – enter the destination MAC address.
- **Destination port** – enter the destination port number.

The "SMPTE 2022-7 secondary" settings are similar to those defined for "Primary".

Once the settings are set up, press the "Finish" button for the changes to be applied.

ForA HVS-100TB2 Output

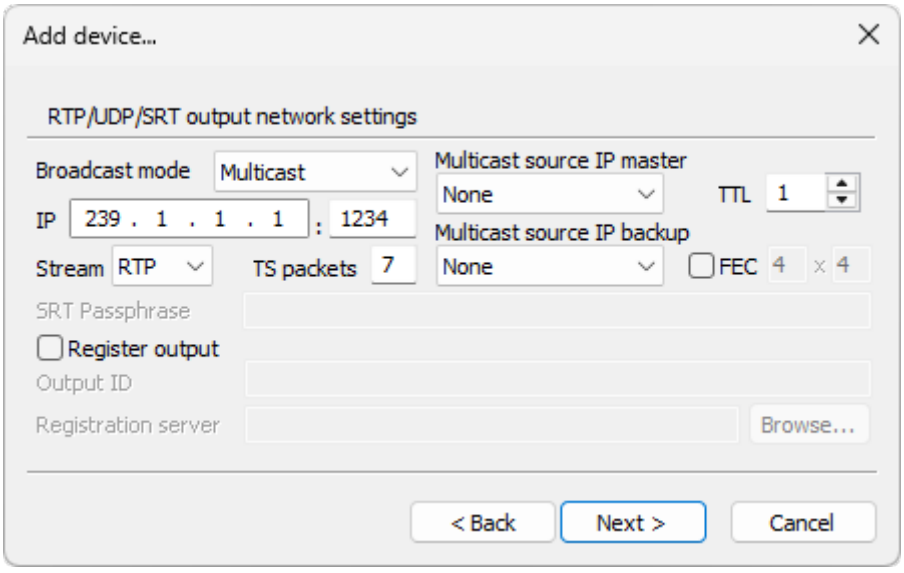


Define the board number from 0 to 7 and channel number from 0 to 4 for the ForA HVS-100TB2 output device.

Press "Finish" to apply the changes.

RTP/UDP/SRT Output

Network Settings



The following RTP/UDP/SRT output network settings should be configured here:

- **Broadcast mode** – here choose the broadcast transmission method (unicast or multicast).

> The SRT protocol is currently supported in unicast mode only.

- **IP address** – in unicast mode, enter the destination station address and port. In multicast mode, enter the IP and port of the multicast group that will be used for multicasting.
- **Stream** – here choose the stream protocol type (RTP, UDP or SRT).

> The SRT protocol is currently supported in unicast mode only. Refer to this paragraph for details on SRT protocol setup.

- **SRT Passphrase** – define the passphrase for SRT stream encryption.

> The SRT passphrase length should be between 10 and 79 characters.

- **TS packets** – specify the number of transport stream packets placed in the payload portion of the RTP/UDP/SRT packet.

> Refer to the network technical documentation for more information on the RTP, UDP and SRT packets.

- **Multicast source IP master** – here choose the IP address of the local network adapter to be used for multicasting.
- **Multicast source IP backup** – here choose the IP address of the local network adapter to be used for multicasting instead of the master IP.

> It is recommended to set up the static IP address for this adapter. The "Multicast source IP master" and "Multicast source IP backup" parameters affect multicast mode only.

- **TTL** – here define the number of routers (hops) that multicast traffic is permitted to pass through before expiring on the network.

> The "TTL" parameter affects multicast mode only.

> Refer to the network technical documentation for more information on the TTL option.

- **FEC** – the parity packets generated for any stream which can be used to correct missing data due to packet loss; check this option and define the rows and columns values in the corresponding fields.

> The "FEC" parameter affects the RTP mode only.

- **Register output** – this option allows you to register the output stream on the Cinegy Route Directory Server in order to be used by other Cinegy IP-based broadcast components as an RTP/UDP input. In this case, enter the Route Directory Server IP and output stream ID (as stream name).

> No special symbols can be used for the stream ID, alphanumeric only and space symbol are allowed.

> The "Register output" parameter affects multicast mode only.

Press the "Next" button to continue RTP/UDP/SRT output configuration.

SRT Protocol Setup

SRT (Secure, Reliable Transport) is an open-source video transport protocol that allows broadcast video distribution encrypted across public networks. It operates as unicast UDP, therefore broadcast mode must be set to unicast. Then "SRT" should be selected from the "Stream" drop-down list.

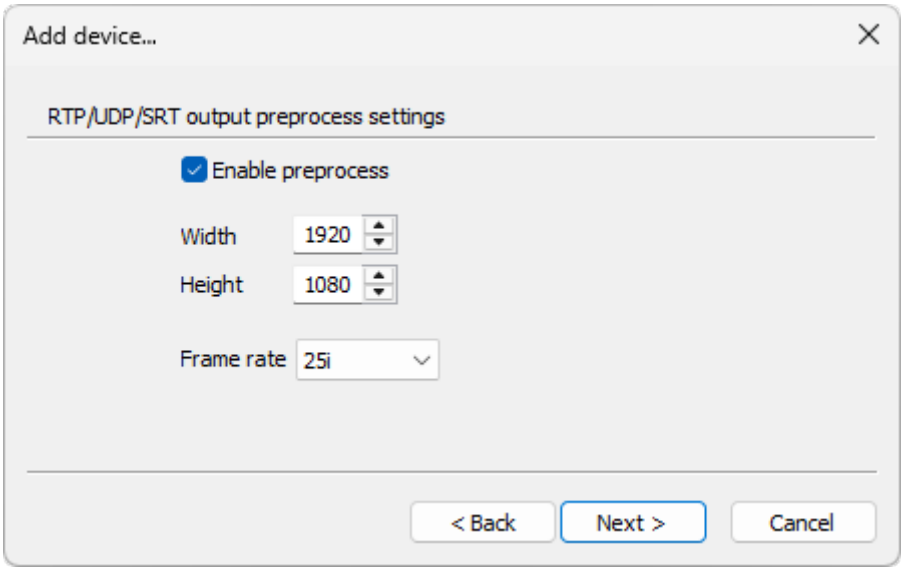
The SRT protocol can act in two modes, as a caller or a listener, which differ dependent on the IPv4 address contained within the URL.



Refer to the **RTP/UDP/SRT URL Format** article for detailed description of SRT modes.

Preprocess Settings

The pre-process allows you to downscale input video raster and decrease the framerate of the selected video to the size most suitable for broadcasting (for example, in the web).



Here define the parameters of input video raster to be pre-scaled to specified resolutions.

In this dialog select the "Enable preprocess" checkbox to define the following parameters:

- **Width** – specify the output horizontal size of the coded picture, in pixels.
- **Height** – specify the output vertical size of the coded picture in pixels.
- **Frame rate** – use the drop-down list to define the nearest appropriate frame rate.

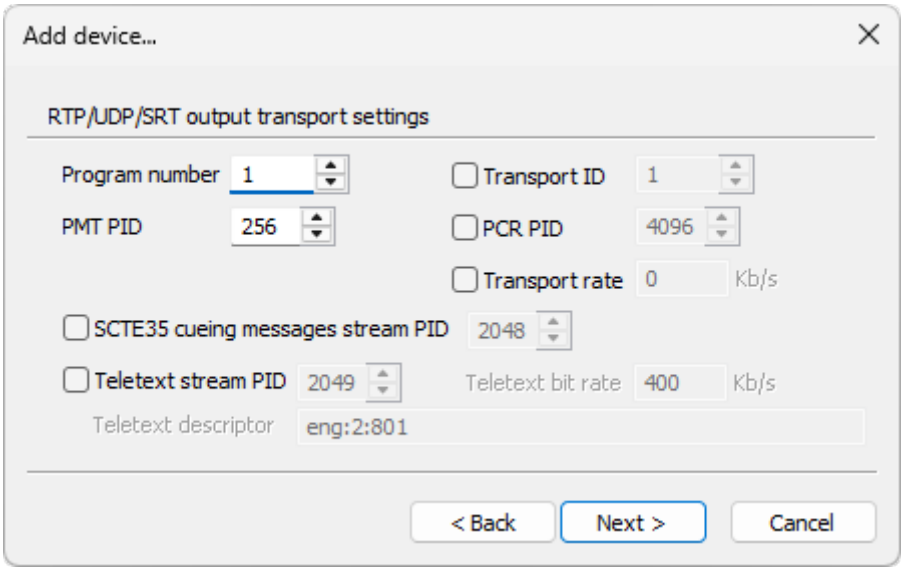
For example, you may downscale video from 1920x1080 to 1440x1080, 852x480, 640x360, 544x576 or other for all supported codecs, and reduce frame rate from 50 to 25 or from 59.94 to 29.97 fps.



All broadcast-specific data (CC, AFD, PR, SCTE-35) is removed from pre-scaled streams.

Press the "Next" button to continue RTP/UDP/SRT output configuration.

Transport Settings



In this dialog you can define the following RTP/UDP/SRT output transport settings:

- **Program number** – define the program PID that will be used.
- **PMT PID** – define the Program Map Table PID value.
- **Transport ID** – define the label that identifies the Transport Stream from any other multiplex within a network.

> You can set up manually the maximum bitrate of MPEG transport stream which includes video, audio, data and other streams. Please keep in mind that this value should be greater than the sum of all bitrates plus some overhead to cover local spikes on complicated scenes.

- **PCR PID** – define the Program Clock Reference PID value.
- **Transport rate** – select the checkbox and define the transport rate value in Kb per second.
- **SCTE35 cueing messages stream PID** – select the checkbox and define the PID value to enable SCTE-35 messaging.
- **Teletext stream PID** – select the checkbox and define the PID value to enable VANC tracks in the playlist containing OP42/47 teletext data packets.
- **Teletext bit rate** – define the teletext bit rate value.

Teletext Descriptors

The "Teletext descriptor" option defines the teletex descriptor with the following syntax: `Language:Type:Number`, where:

- **Language** – specified as ISO language code (e.g. ENG, SPA, etc.).
- **Type** – defines the teletext type. This descriptor can have the following values:

1	Initial teletext page
2	Teletext subtitle page
3	Additional information page
4	Program schedule page
5	Teletext subtitle page for hearing impaired people

Default value for teletext descriptor is "eng:2:801".

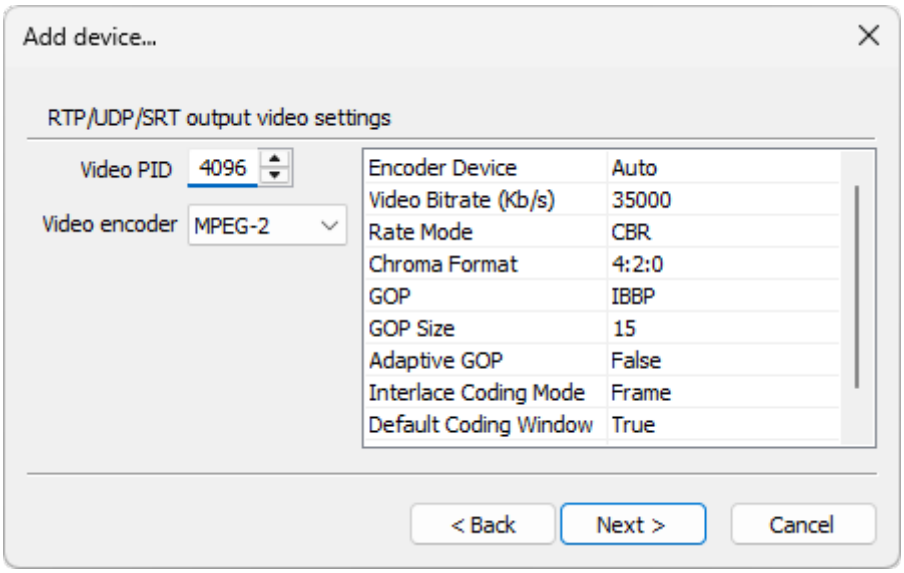
- **Number** – identified by its single-digit magazine number and its two-digit page number.

Please note that although the TS descriptor may be specified, the operator must ensure that the actual teletext values are on the same magazine and page. Cinegy Air will not perform teletext packet remapping.

Multiple teletext descriptors can be specified, separated by semicolon `;`. For example: `eng:1:801;lav:2:102;spa:3:101;ukr:4:802;jpn:5:303`

Press the "Next" button to continue RTP/UDP/SRT output configuration.

Video Settings



In this dialog, you can define the RTP/UDP/SRT output video settings. Some parameters may vary or be missing depending on the selected video encoder.

- **Video PID** – define the video stream PID in the program.
- **Video encoder** – define the video encoder type. Select the corresponding option from the drop-down list to choose MPEG-2, H.264, HEVC, Daniel2, or AVCI/AVCU video encoder type and configure its settings in the table on the right.
- **Encoder device** – select the device explicitly for video encoding, or enable "Auto" to use the device defined in the Video effect accelerator setting.
- **Video bitrate** – define the bitrate value used for compression.
- **Rate mode** – choose either VBR (variable bitrate) or CBR (constant bitrate) mode by selecting the corresponding option from the drop-down list.
- **Chroma format** – define the color space (4:2:0 or 4:2:2) by selecting the corresponding option from the drop-down list.
- **Bit Depth** – choose whether 8- or 10-bit stream processing should be used.
- **GOP** – choose the Group of Picture (GOP) structure of the resulting stream from the drop-down list and define the GOP size in frames.
- **Adaptive GOP** – select this option to allow GOP to be of variable length.
- **Interlace coding mode** – define the frame-coding rule for interlaced video. Each video encoder has its own set of

modes. The following modes are available:

- **Field** – the simplest interlace coding mode, when odd and even lines are encoded as two separate half-height images.
- **Frame** – this is the macroblock-adaptive frame-field (MBAFF) coding level. When there is no motion, the block is encoded as progressive video. For blocks with motion from one field to another, blocks are encoded as interlaced.
- **PAFF** – this picture-adaptive frame-field (PAFF) coding mode uses adaptive "frame"/"field" coding.
- **Pseudo** – this mode was introduced due to the complete lack of interlaced coding support for H.265 and the lack of support for H.264 in NVIDIA boards that do not natively support it (Turing, Ampere, and Ada families). The "Pseudo" mode imitates the "Field" approach using progressive coding. In this mode, all even lines of the frame are situated in the top half of the frame, and all of the odd lines - in the bottom half of the progressive coded frame. This mode eliminates the combing effect, and its quality is equal to the "Field" mode.

  This mode cannot be decoded with external decoders.

- **Progressive** – in this mode, the progressive frame is encoded. Use of progressive interlace mode leads to a combing effect on the edges of moving objects.

- **H.264 entropy coding mode** – define coding mode for the H.264 video encoder by selecting the corresponding option from the drop-down list.
- **Default coding window** – when enabled, uses the coding window timing values defined and validated by Cinegy. It can be disabled to specify a custom value; however, this is not recommended, as the default values have been verified by Cinegy and provide the most efficient configuration.
- **Coding window** – define the decoder buffer delay used to optimize the quality parameters for coding the GOP. This field becomes available when the "Default coding window" option is disabled. Increasing the delay value may improve encoding quality.

Having configured the encoding settings, press the "Next" button to continue RTP/UDP/SRT output configuration.

Video Encoding

The support for specific codecs and GPU acceleration depends on the selected encoder device. If the chosen encoder device does not support a particular codec or encoding parameter, the Cinegy Playout engine may fail to start. In such cases, refer to the debug log for detailed error information.

The table below summarizes GPU encoding support for the available codecs:

Codecs		CPU Encoding	GPU Encoding
MPEG-2		+	-
H.264		+	+
HEVC		-	+
AVCI/AVCU		+	-
Daniel2*	4:2:0	+	-
	4:2:2	+	NVIDIA GPU

** This specific case occurs under the following conditions:*

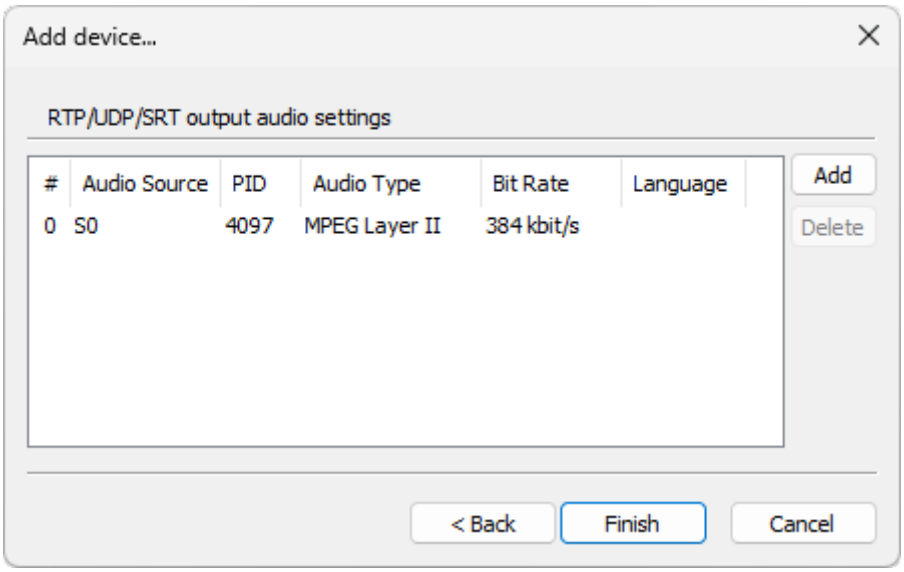
- *An NVIDIA graphics card is installed and used as the primary device by the operating system.*
- *The "Encoder Device" option is set to "Auto", meaning the Video Effects Accelerator setting is used, which by default selects the NVIDIA graphics board.*

In this configuration, GPU encoding is used by the Cinegy Playout engine, including for the 4:2:0 chroma format, which may prevent the engine from starting. To avoid this, select Daniel2 4:2:0 CPU in the encoder settings.

	The feedback stream for the Daniel2 codec is encoded in 4:2:0 format.

	The AVCI/AVCU encoder is properly supported only for HD and UHD TV formats.

Audio Settings



By default, this dialog contains the "S0" audio source of the MPEG Layer II audio type with the 384 kbit/s bit rate. You can edit it according to your needs by selecting a different audio source number, type and bit rate from the corresponding drop-down lists. You can also change PID of the current audio source and specify the three-letter ISO code of the language to be added to the stream via the keyboard in the corresponding fields.

	If you select the audio type that already contains bit rate in its name, the corresponding field in the "Bit Rate" column will be disabled.

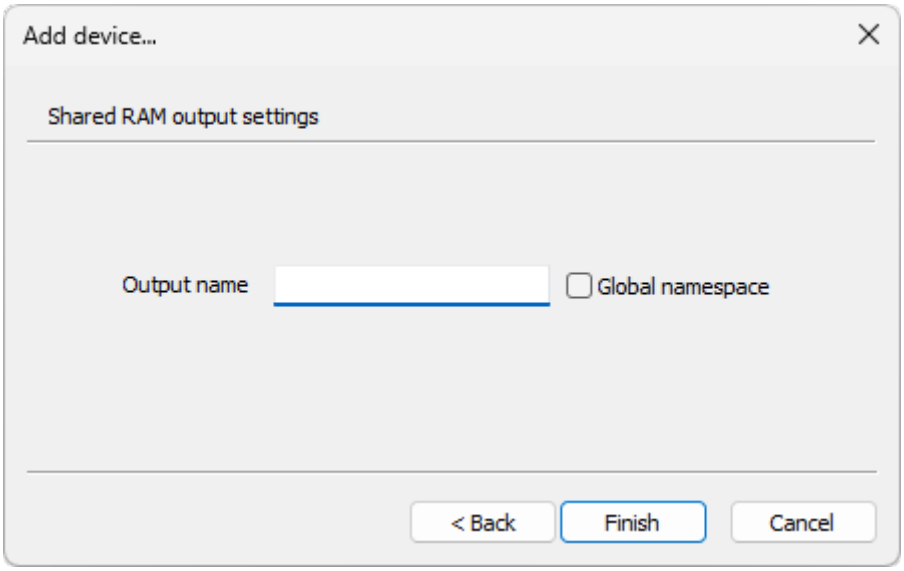
To add another audio source, press the "Add" button and edit its parameters in the table as described above. Use the "Delete" button to remove an audio source from the list.

Press "Finish" to apply the changes.

Shared RAM Output

The Shared RAM output can be used to send a live uncompressed stream to another Cinegy application installed on the same machine, e.g. Cinegy Capture, Cinegy Multiviewer or another Cinegy Playout instance.

Define the following parameters for the Shared RAM output device:



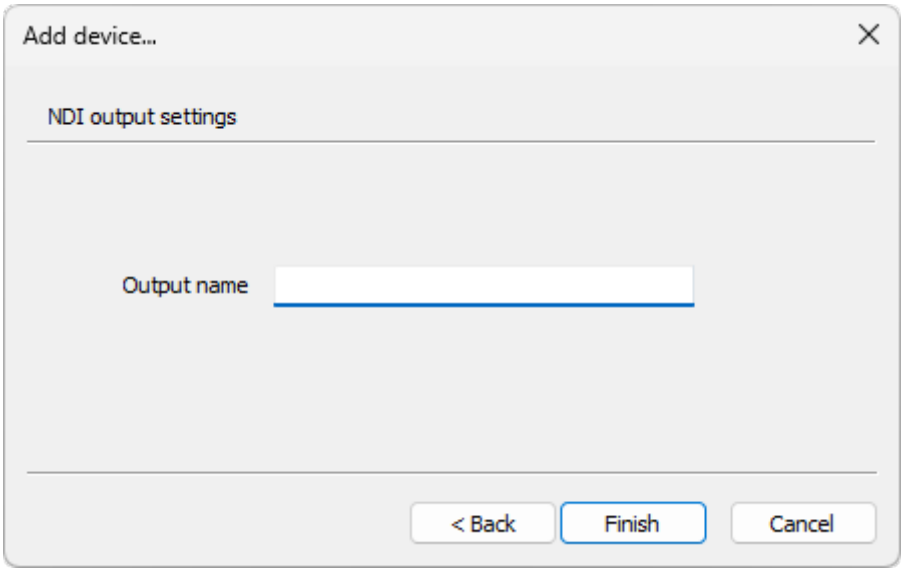
- **Output name** – define the name for your output device via the keyboard.
- **Global namespace** – check the option to enable sharing between several users on the machine or between applications and services.

If the "Global namespace" option is selected, the engine should be started using the "Run as administrator" command; otherwise, the engine will not start.

Press "Finish" to apply the changes.

NDI Output

Support for NDI is an optional feature requiring additional licensing.



Here define NDI output name in the respective field. Press the "Finish" button for the changes to apply.

Chapter 4 Launching Playout

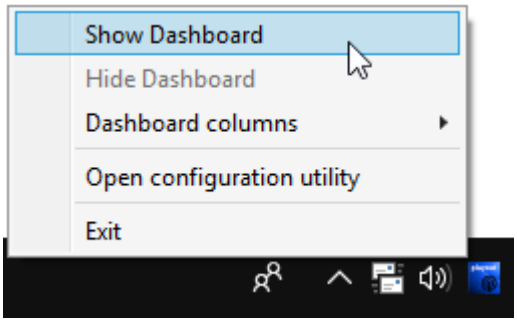
4.1 Automatic Launch

Cinegy Playout is responsible for sending video and animated graphics on air. By default, Cinegy Playout is started automatically on the system startup. The engine also restarts automatically in case of failure.

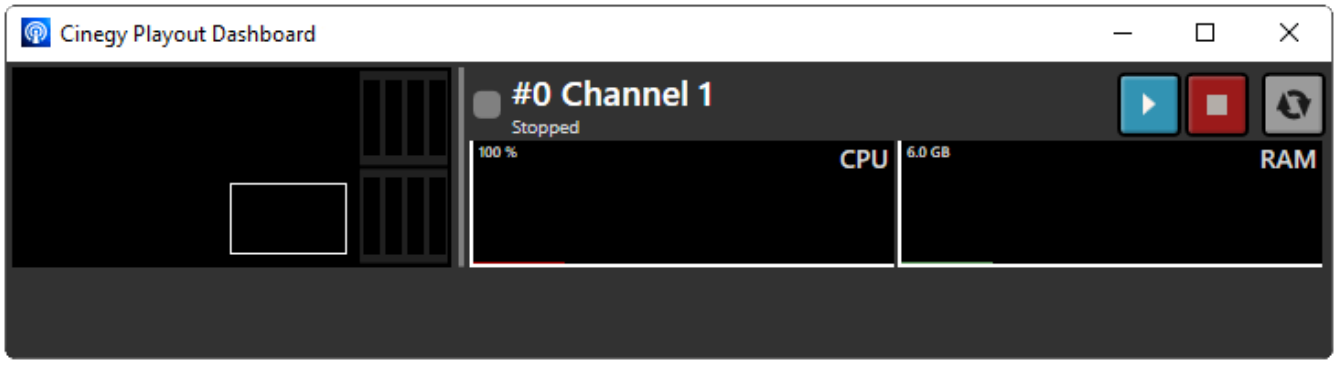


When started, the Cinegy Playout icon is displayed in the notification area of the taskbar.

To see and control the status of all engine instances, right-click the Cinegy Playout icon in the taskbar and select the "Show dashboard" command:



The following Cinegy Playout Dashboard window will appear. This is a default dashboard view with no Cinegy Playout instances started:

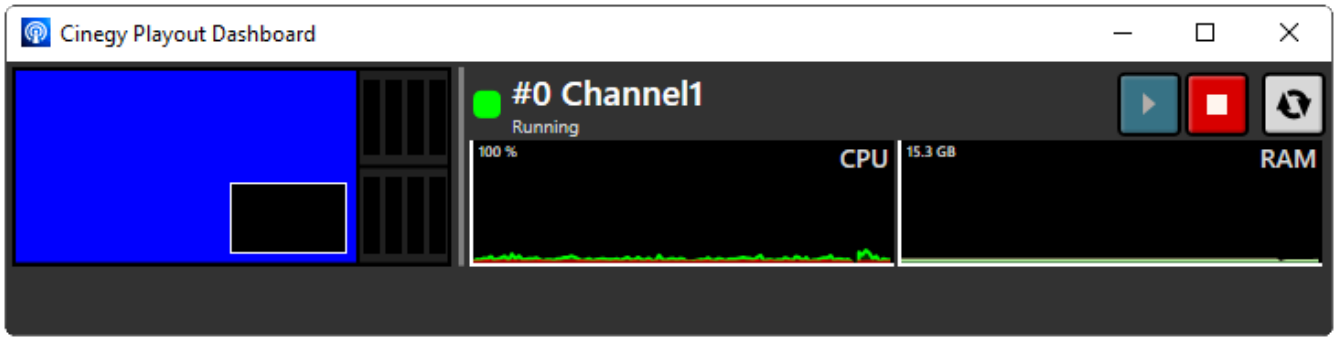


In the left-hand part of the dashboard, you can see the control monitors of configured Cinegy Playout instances and their individual audio level indicators. The thumbnail of the first frame of the next cued item is displayed in the bottom right corner of the monitor.

In the right-hand part of the dashboard the instance name and status are displayed, as well as CPU and RAM diagrams. The following set of controls can be used to manage each engine instance:



Press the "Start" button to start the specified instance broadcasting. By default, the control monitor will be filled with blue color meaning that the engine is on air but there is no media material for the broadcast yet. It is possible to customize the filling color in the instance configuration file.



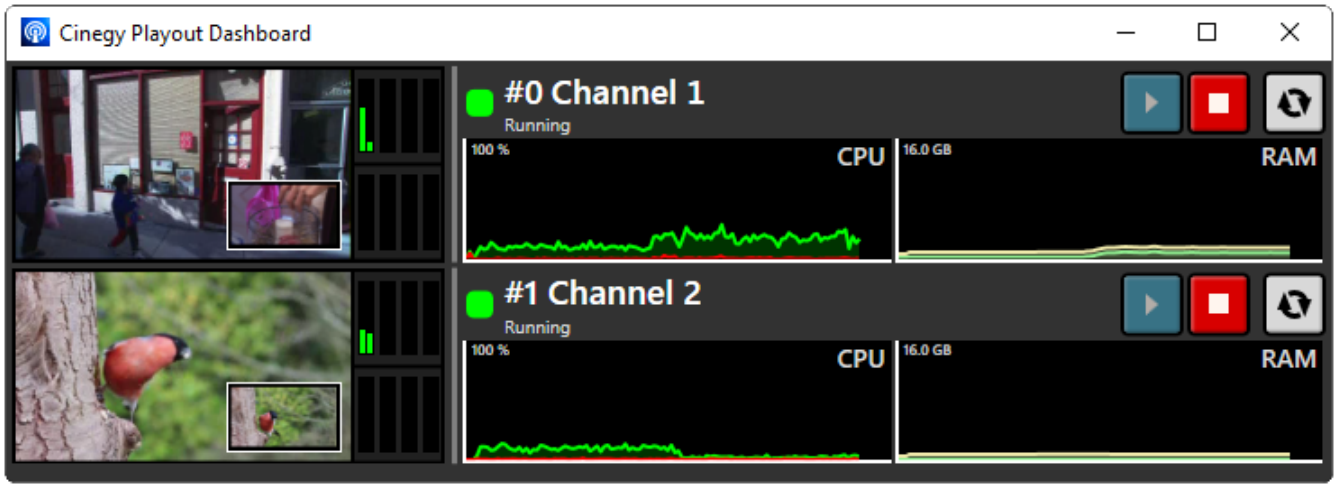


Press the "Stop" button to stop the specified instance broadcasting.



Press the "Restart" button to restart the specified instance broadcasting.

The dashboard panel with several configured and started engines looks as follows:



The engine status is indicated with the following color coding:



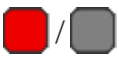
The green indicator shows that the engine is connected and running.



The red indicator shows that a crash has occurred during playout with automatic restart.

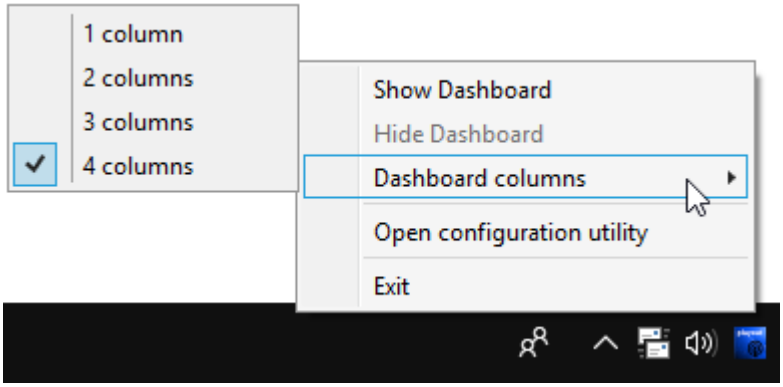


The gray indicator shows that the engine is stopped.

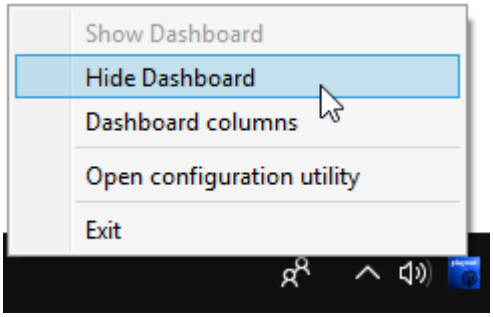


The blinking red indicator appears when the engine status is "Failed" (the specified engine has not been properly configured or some license is missing).

It is possible to adjust the dashboard view by changing the number of columns for instances to be displayed in the dashboard window. To do this, right-click the Cinegy Playout icon in the taskbar and choose the required number of columns from the "Dashboard columns" submenu:



To hide the dashboard, press the "X" button on the Cinegy Playout Dashboard window or right-click the Cinegy Playout icon in the taskbar and select the "Hide dashboard" command:



To exit the application, use the "Exit" command. To launch the engine again, run the PlayoutDashboard.exe file from your Cinegy Playout installation folder.

4.2 Manual Launch

This mode is mainly used for troubleshooting.

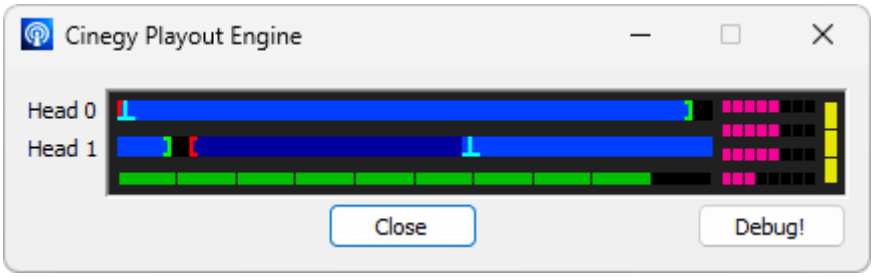
The Cinegy Playout Engine application can be started manually by running the PlayOutExApp.exe file. This launches Cinegy Playout instance 0.

To start a different Cinegy Playout instance, use the Command Prompt and specify the path to the Cinegy Playout installation folder along with the desired instance number. For example, to launch Instance 1 from the default location, use the following command:

```
C:\Program Files\Cinegy\Cinegy Playout>.\PlayOutExApp.exe /n:1
```

You will need to restart the Cinegy Playout Engine application manually each time it is closed.

When the Cinegy Playout Engine application is started, the following window appears:



Head 0 and Head 1 progress bars represent buffer filling; they vary while playlist items are played back. One Head displays buffer filling for the currently played item while the other Head shows the cued item.

If any issues are detected while monitoring the Cinegy Playout Engine with this application, a memory dump file can be generated by pressing the "Debug!" button. This file can then be sent to the Cinegy Support Team via e-mail.

The memory dump file contains register states, descriptions of where the problems originated, plus workflow and other debug data. A dump file is generated automatically in the unlikely event of a Cinegy Playout failure.

To close this application, press the "Close" button.