CAPTUREBOX USER MANUAL

*(Version: **2.3,** March 2020)*

Current software versions:

CaptureBox Mega:　　　　　　12184.0

This guide explains in detail all functionalities of the **CaptureBox** modules.

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Preface

Dear **PlayBox** customer,

Thank you for purchasing our product! We would like to assure you that you have chosen the most cost-effective and versatile TV automation system on the market. As always, we are trying to stay close to our customers' needs, making sure they all receive adequate support and satisfaction. Your opinion about our product is an exceptionally valuable source of information for us. The ease of working with the **PlayBox** products results mainly from the suggestions and comments of our current respected customers.

This manual is structured into several sequential chapters, each aiming to ease the installation, fine tuning, and use of our products. We hope that you will enjoy working with it, and we are anxiously looking forward to receiving your feedback.

Please, send your questions, suggestions, and assistance requests to:

support@playboxtechnology.com

Style Conventions

- File names, software, documents or terms are written in *italics*
    - The data is written in the *settings.ini* file.
    - The file is located in *C:\Program Files\DMT**AirBox***
    - For further information read *Shortcuts* reference book.
    - The *VTR* is controlled via *RS-422*.
- Direct quotations from the computer screen are presented as follows:
    - **Menu Items and commands**
    - ***Tab/Page names***
    - **Column names (i.e. in a playlist or another grid)**
    - *Field names, check boxes*
    - ***Buttons***
    - Screen readings are written in [square brackets]
    - **The keyboard keys are enclosed in <> signs**
    - *Terms are defined in the Glossary at the end of the manual*
- The arrows, used in the setting procedures mean as follows:
    - ➔ A menu item follows;
    - ⇨ A page(tab) name follows;
    - → A field name, a check box name, or a value name follows.

Except for arrows, you can distinguish between the relevant menu categories also by the styles, listed above.

Introduction

GETTING STARTED

Quick Start

1. Connect the video source signal to **CaptureBox** video input;

2. Launch **CaptureBox**;

3. Select the media folder you wish to capture to;

4. Fill in the *Tape ID* or *Channel* field;

5. Type the file name you want to capture the content to;

6. Click on the **Manual Capture** button;

7. When required, stop the capturing by pressing the **Abort** button.

Congratulations! You have just captured your first **CaptureBox** clip!

CAPTURE SETTINGS

Depending on the plug-in used you have different capture settings. To select the desired plug-in, press the Device Select button in the main user interface. The following dialog appears:

Select the plug-in you would like to use and press OK. To view a detailed description of the MUSE and the IP Capture plug-ins, please, refer to the respective sections below.

MUSE

The MUSE capture plugin stands for Media Universal Source Engine and it provides an additional layer between the capture and the video source, thus allowing the use of the same video source by many clients.

For example, the same LIVE IN video source can be used simultaneously by CaptureBox and **AirBox**. The number of applications, which can use the same live input is limited by the machine resources.

You can make the preferred capture settings for MUSE input in this dialog:

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The *Input* tab allows you to select an already preset **Live input** from the drop-down menu, or add a new input. Pressing the **Edit** button invokes the **Live Inputs Editor**, which is the same as the one in **AirBox** and is described in the relevant [section](#) above.
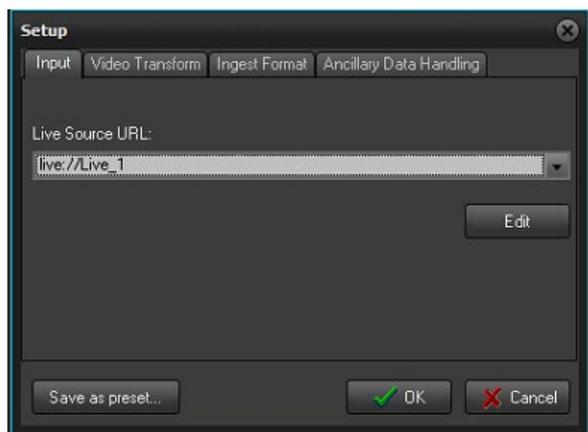
In the *Ingest Format* tab you can select your *Video, Audio Encoders* and *Muxer* from the corresponding drop-down menus. You can also write a negative number here if you want to remove frames from the input.

Use the ☑ *Capture file split interval* box if you would like you capture filed to be split in pre-defined seconds intervals.

If you select the ***MainConcept Multiplexor*** *Muxer*, the **Video**, **Audio**, and **Multiplexer** settings will be powered by MainConcept©. You also have another option here - the ***Avi Multiplexor.***
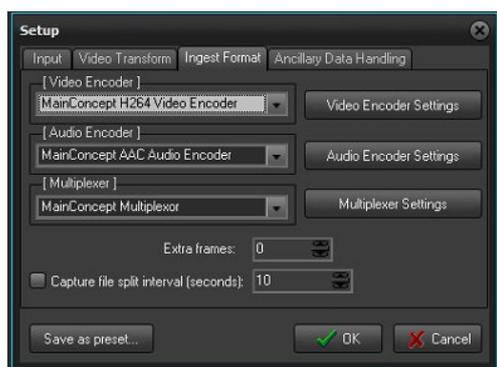
IMPORTANT! The *PCM Audio Encoder* ONLY works with the *DVCPROHD Video Encoder* and the *Avi Multiplexor*. All other video encoders, except for the *DVCPROHD* one, MUST be used with the *MainConcept Multiplexor*.

The *Ancillary Data Handling* tab allows you to manage Closed Captions handling when capturing. Choose one of the three options:

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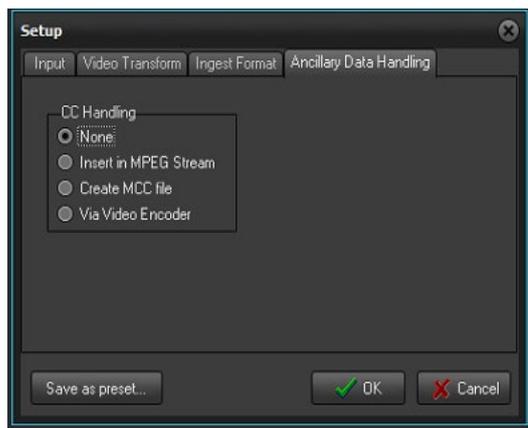
⊙ **None** – Select this option if you would like to disable the Closed Captions option.

⊙ **DMT Inserter** – Select this option if you would like the Closed Captions to be burned in the output image.

⊙ **Separated MCC file** – When this option is selected, the Closed Caption will be saved to a file with an *.mcc* extension in the **CaptureBox** folder.

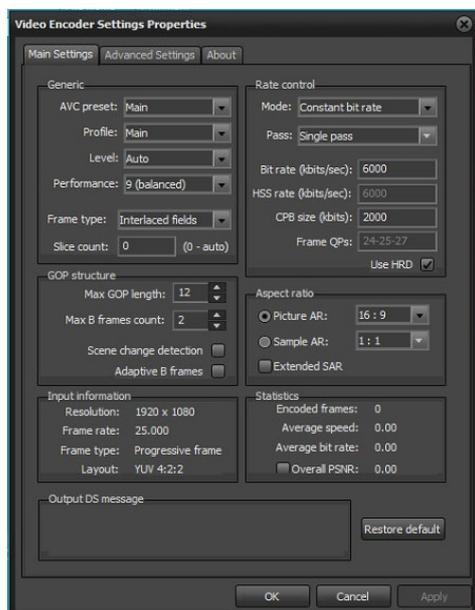⊙ **MainConcept Encoder** – This option also burns the Closed Captions in the image. However, it uses the MainConcept encoder for this purpose, instead of the **PlayBox** one.

Video Settings

Depending on the selected *Video Encoder*, **MPEG-2 Video Encoder** or **H264 Video Encoder**, pressing the **Video Encoder Settings** button will invoke different dialogs.

MPEG-2 Video Encoder

The **Main Settings** tab allows you to configure the video encoder. You can select the settings of the *MPEG preset* and the *Video Format* in the corresponding fields. Further down in the *Generic* area, you are able to define some additional settings of your video input, like *Profile*, *Level*, *Picture type*, *Field order,* and *Aspect ratio*. If you select **Progressive** *Picture type,* you can also set a *Pulldown* mode to convert the number of frames.

The *Bitrate Control* area allows you to modify the input video encoding *Mode* and the type of encoding from the *Pass* field. The encoding type can be **Single pass**, **Multi-Pass Analyze**, and **Multi-Pass Encode**.

Depending on the *Mode*, you have different options for the bitrate speed. For **Constant** mode you can set the Bit-rate speed in kb/s from the corresponding field and for **Variable** mode you can set the minimum *Bit-rate* and the *Maximum rate* in the respective fields. Also, you can set the *VBV buffer size* for the latter two modes. For **CQ_adaptive** and **CQ_strict** mode you can enter the number of I, P, and B frames.

> **NOTE:** The *VBV buffer size* should be set to 112. If you want to enter a different value, please consult our support team at support@playboxtechnology.com.

In the *GOP structure* area you can set the *Maximum GOP length* and the *Maximum B-frames count*, Depending on your needs, enter the following values:

- For I-frame set the Max GOP length to '1' and the Max B-frames count to '0'
- For PAL set the Max GOP length to '12' and the Max B-frames count to '2'
- For NTSC set the Max GOP length to '15' and the Max B-frames count to '3'

In this field you can also set the *Scene change detection* mode.

The bottom fields, *Input info* and *Statistics*, show the configurations of the input, as well as statistics about the encoding speed, bitrate, and the number of encoded frames. If you place a check on the ☑*Overall PSNR* box, you will be able to see also the peak signal-to-noise ratio of your video input.

If you press the **Restore default** button, your settings will be changed back to the default ones.

The **Advanced Settings** tab allows you to change some additional settings. In general, these settings should not be changed, unless advised by our support team. If this is the case, in order to change a certain setting from the **Parameter** column, simply double-click on the corresponding **Value** input, and enter the desired value.
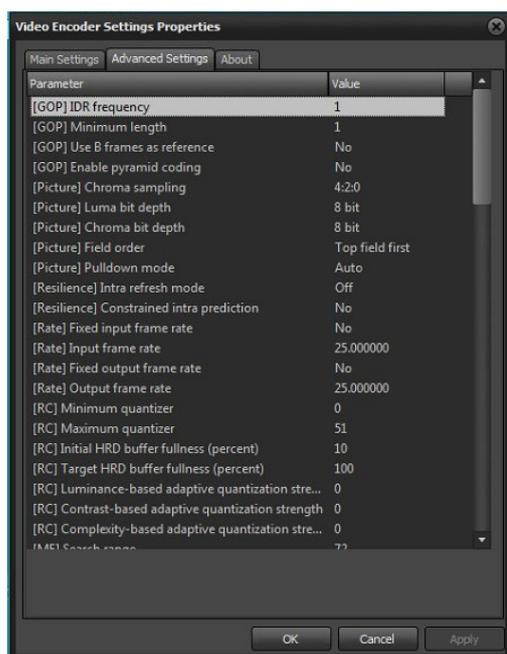

> **IMPORTANT:** Please, do NOT change these settings before consulting with our support team.

MXF Capture Configurations

To configure the proper settings for MXF capture, please follow PRECISELY the steps below:

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1. In the **Capture Format** tab of the **Setup** dialog select the following: **MPEG-2 Video Encoder** from the *Video Encoder* drop-down list, **PCM Audio Encoder** from the *Audio Encoder* drop-down list and **MainConcept MXF Multiplexer** from the *Muxer* drop-down list.
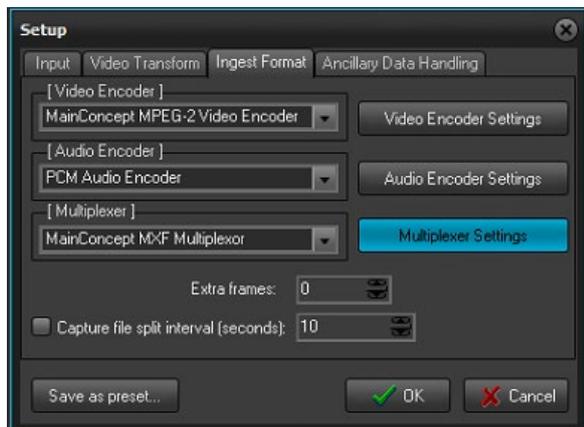
2. Press the **Video Encoder Settings** button.

3. In the dialog that appears make sure that **MPEG-2** is selected for *MPEG preset* and **422 profile** is selected for *Profile*:
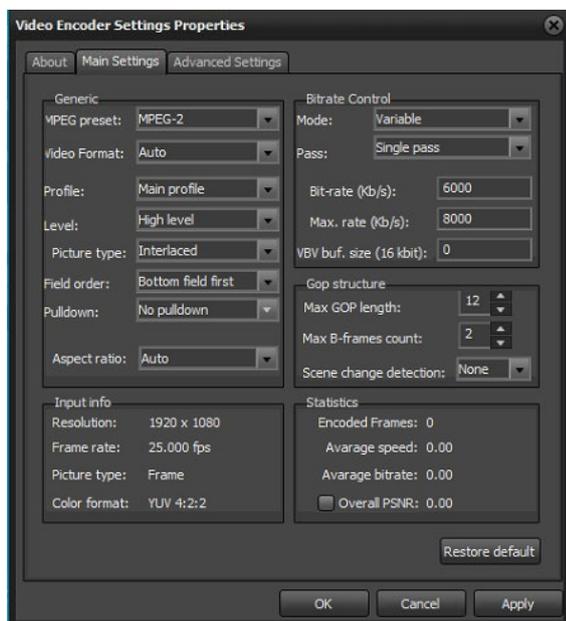
4. Go to the **Advanced Settings** tab and enter the desired configurations, depending on your preference. Please, refer to the given settings below for SD or HD. When you are ready with the configurations press Apply.

5. Go back to the **Main Settings** tab and enter the appropriate configurations for SD or HD, depending on your preference. Press **Apply** when you are ready.

6. Press **OK**. Your MXF capture configurations are now saved successfully!

Settings for SD

Please, refer to the following screenshots to view the SD settings for MXF capture:

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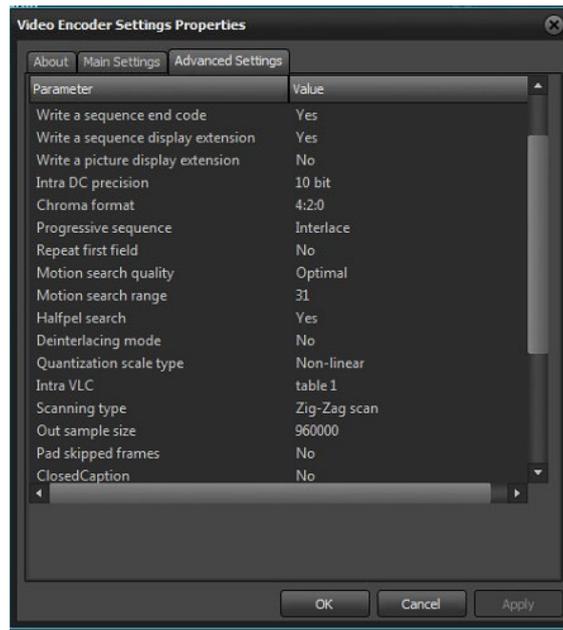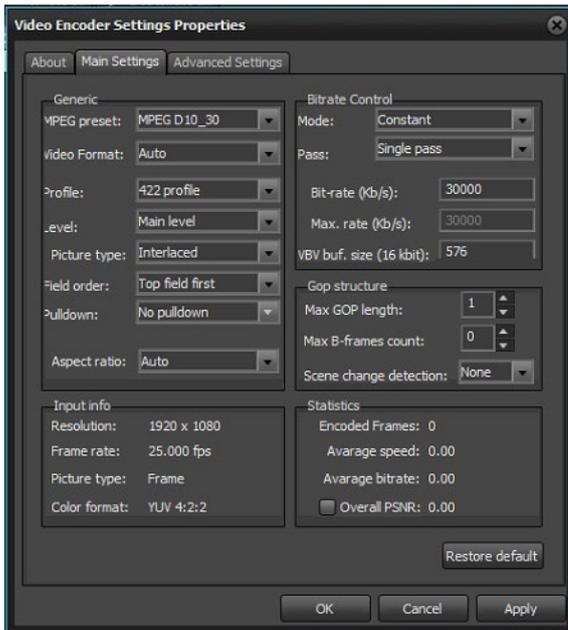
Settings for HD

Please, refer to the following screenshots to view the HD settings for MXF capture:
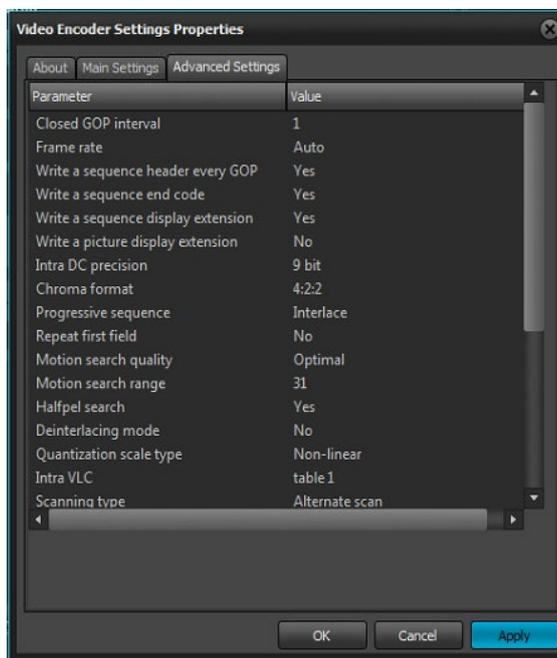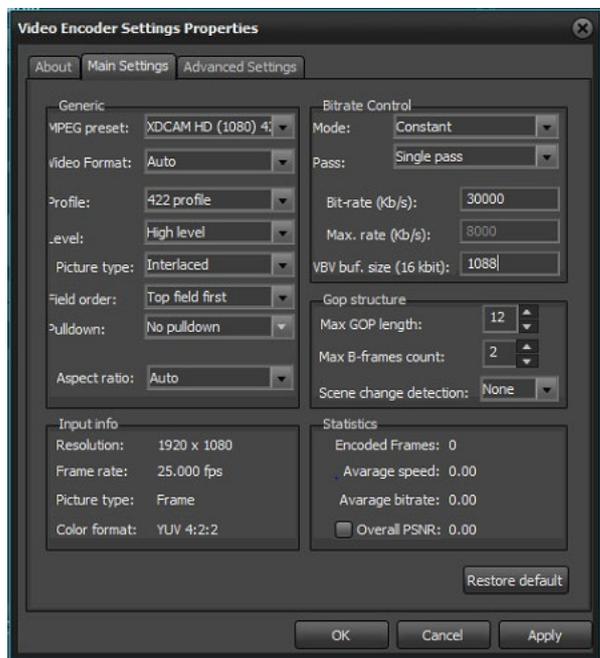
H264 Video Encoder

The **Main Settings** tab allows you to configure the video encoder. You can select the settings of the *AVC preset*. Each Preset is a predefined group of encoding settings, designed to facilitate the user. You can also specify the *Profile*, *Level*, and *Performance* in the corresponding fields. Further down in the *Generic* area, you are able to define some additional settings of your video input, like *Frame type* and *Slice count*.
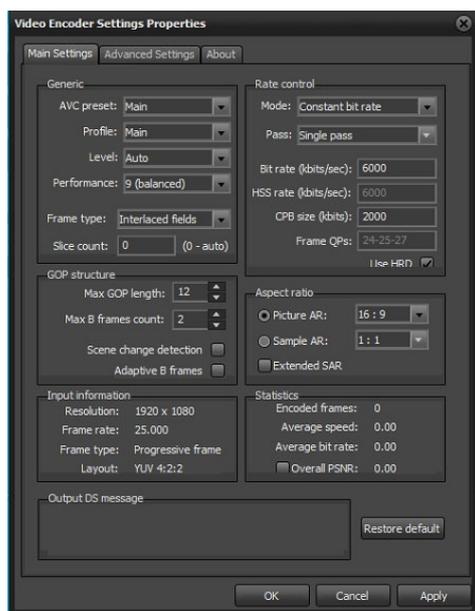
The *Rate Control* area allows you to modify the input video encoding *Mode* and the type of encoding from the *Pass* field. You have three options here:

- **Single pass** – encoding without gathering statistics

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- **Multi-Pass Analyze**– encoding and gathering statistics for next pass
- **Multi-Pass Encode**. **–** encoding using the gathered statistics and updating it

Depending on the *Mode*, you can set different values. For **Constant** and **Variable bit rate** mode you can set the minimum *Bit-rate* speed in Kbits/sec, and for **Constant quantizer** and **Target quality** mode you can enter different values for the *Frame QPs* in the respective field. If you place a check in the ☑ *Use HRD* box the program will optimize the buffering mechanism with a hypothetical reference decoder, so that the video bit stream will not suffer from buffer overflow or underflow.

Once the Use *HRD box* is checked, you will be able to set the *CPB size* (the size of coded picture buffer in Kbits). If your *Rate control Mode* is **Variable bit rate** or **Target quality**, you can also enter a value for the *HSS rate* (the hypothetical stream scheduler rate (bits/sec) of the encoded video elementary stream).

Once the Use *HRD box* is checked, you will be able to set the *CPB size* (the size of coded picture buffer in Kbits). If your *Rate control Mode* is **Variable bit rate** or **Target quality**, you can also enter a value for the *HSS rate* (the hypothetical stream scheduler rate (bits/sec) of the encoded video elementary stream).

NOTE: In *Use HRD* mode it is advisable that the *Rate control Mode* is set to **Constant bit rate** and the *CPB size* is equal to three times the Bit rate.

In the *GOP structure* area you can set the *Maximum GOP length* and the *Maximum B-frames count*, Depending on your needs, enter the following values:

- For I-frame set the Max GOP length to '1' and the Max B-frames count to '0'
- For PAL set the Max GOP length to '12' and the Max B-frames count to '2'
- For NTSC set the Max GOP length to '15' and the Max B-frames count to '3'

Depending on your preferences, you can also check ☑*Scene change detection* and ☑*Adaptive B-frames*, if you have entered a value in the *Max B frames count* spin-box.

The *Aspect ratio* field allows you to set a ⊙ **Picture AR** or a ⊙ **Sample AR** mode and select a ratio from the corresponding drop-down menu.

⊙ **Picture AR** fixes the aspect ratio of the whole picture;

⊙ **Sample AR** fixes the aspect ratio of pixels in the output picture.

The bottom fields, *Input info* and *Statistics*, show the configurations of the input, as well as statistics about the encoding speed, bitrate, and the number of encoded frames. If you place a check on the ☑*Overall PSNR* box, you will be able to see also the peak signal-to-noise ratio of your video input.

If you press the **Restore default** button, your settings will be changed back to the default ones.

The **Advanced Settings** tab allows you to change some additional settings. If you want to change a certain setting from the **Parameter** column, simply double-click on the corresponding **Value** input, and enter the desired value.

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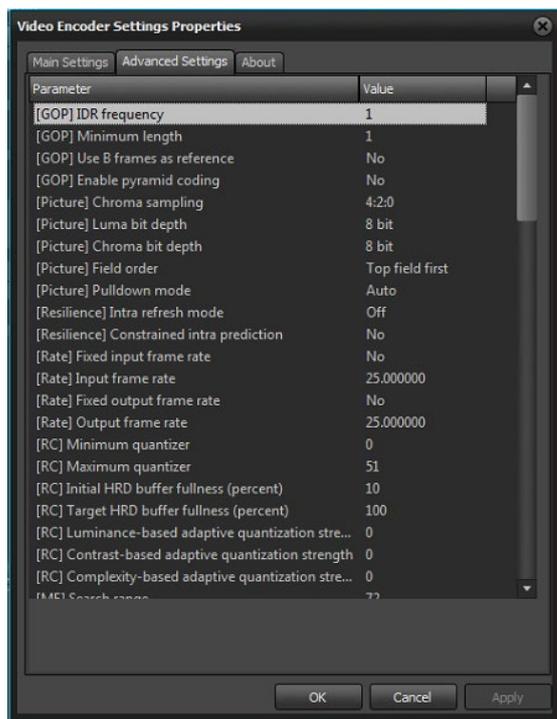
> **IMPORTANT:** Please, do NOT change these settings before consulting with our support team.

DMT QSV H264 Video Encoder

This video encoder only works with a dedicated video processor. For more information please contact our support at support@playboxtechnology.com.

Please, refer to the image below to view the correct video configurations for ***DMT QSV H264 Video Encoder***:
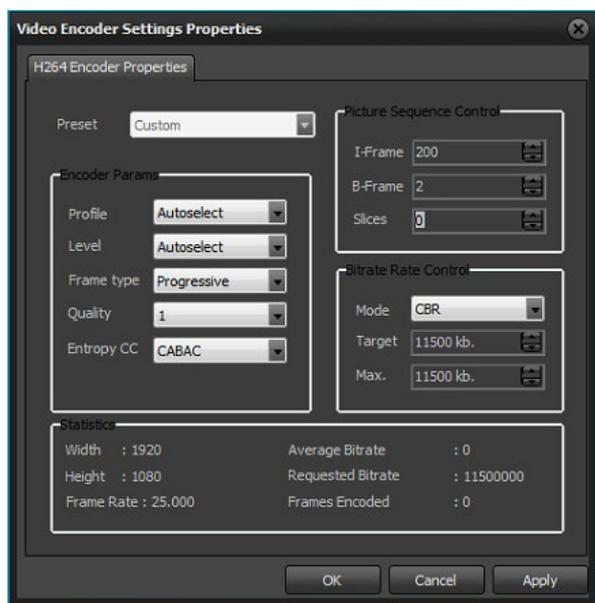
DMT AMD H264 Video Encoder

This video encoder only works with a dedicated video card. For more information please contact our support at support@playboxtechnology.com.

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DVCPROHD Video Encoder

This video encoder only works with the ***PCM Audio Encoder*** and the ***Avi Multiplexor.*** For more information please contact our support at support@playboxtechnology.com.

Please, refer to the image below to view the correct video configurations for ***DVCPROHD Video Encoder***:
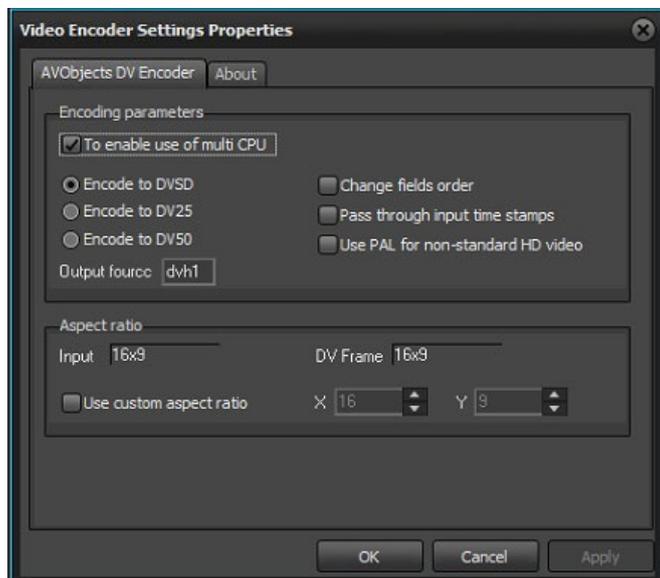
Audio Settings
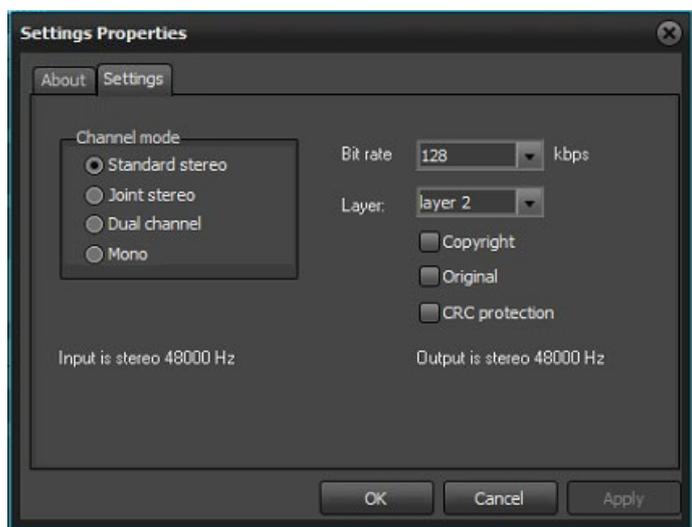
Pressing the ***Audio Encoder Settings*** button in the ***Capture Format*** tab of the ***Setup*** dialog will invoke the following dialog:

Here you can define the audio *Channel mode* from the corresponding radio buttons. Also, you can set the *Bit rate* in *kbps* and select Audio ***layer 1*** or ***2*** for the output. In addition, you can check if the output should be ☑*Copyrighted*, ☑*Original*, or ☑*CRC protected*.

NOTE: The advised settings here are 224 kbps *Bit rate* **layer 2**.

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Multiplexer Settings

The third button, **Multiplexer Settings,** opens the following dialog: Here you can view the parameters of the output MPEG-2 TS stream.
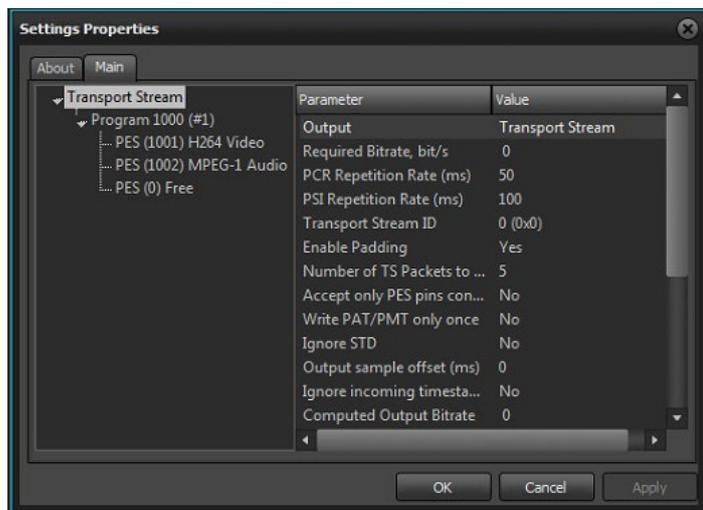
The left field of this dialog gives you an overall schema of your input. Depending on the selected row to the left, you will have different output in the left area of the Settings Properties window, which shows you the configuration of the particular input. You can manage these configurations by double-clicking on the respective entry in the **Value** column.

> **IMPORTANT:** Please, do NOT change these settings before consulting with our support team.

IP Capture

This plug-in is designed for capturing of MPEG2 Transport Streams coming from the network. The resulting file format is MPEG2 TS (no re-encoding takes place).

In the *Destination Address* field enter the IP address of the desired media to be captured and select the *Port* to be used. In case the *Destination Address* is a multicast address, i.e., it receives streams from multiple addresses, you also need to enter the IP address of the specific stream you wish to capture. This is done in the *Source Address* field. Finally, use the *Network Interface Address* field to select the desired network card to be used.

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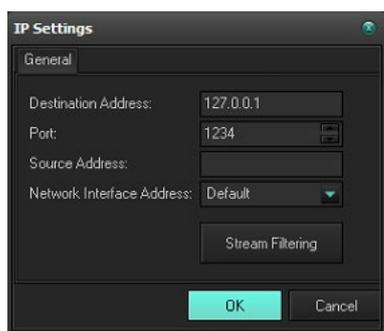
In the setup dialog, enter the IP address of the sending machine and the port at which it streams. If the incoming stream is MPEG2 Transport steam, push the **Stream Filtering** button to select which streams should be left in the captured file.

In the middle of the Filtering dialog, you can find a list of all Programs and Streams that were present in the incoming stream at the time of pressing the **SetUp** button.

To the right of it, there are several buttons that are activated, depending on the selected *Filtering* method. You can select it in the area above:

None – there will be no filtering. **CaptureBox** will capture the incoming stream as is.

Remove Null Packets – as some interfaces need constant bitrates to operate properly, Null packets are included to stuff-up the gap between the real bit rate and the required bit rate. These packets do not carry any information and can be removed in order to reduce the bit rate of the captured files, thus saving storage space.

Simple Include Packet Filtering – Check this radio-button and select which streams to be included in the Output:

 Use the **Add** button to add the currently selected line in the left to the Outputs list in the right.

Use the **Add Custom** button to type manually the PID you would like to add to the Outputs list.

 If you want to remove an already added stream, select it in the Outputs list and press the **Delete** button.

Simple Exclude Packet Filtering – Check it and select the PIDs you do not want to include in the Output file/stream. Use the **Add/Add Custom** button to create a list of PIDs to be excluded from the output.

Programs Reordering – in this mode, you can create several outputs by pressing the **Create Output** button. Then, you can assign the programs to go to each output: Press the Create output button as many times as necessary. Then, select the output in the list to the right and click on the program line to the left. Press **Add** to assign it to the relevant output. Then, check ☑*Use IP streaming* if you want to send the selected output to the network; or leave it unchecked if you only want to capture the stream to an MPEG2 Transport Stream file. When there is more than one output, the endings of the resulting files' names will indicate the number of the output (zero-based).

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Check ☑*Use IP streaming* to send the incoming signal to the network. In the IP streaming settings area, specify the *Host* IP address and the *Port* to which you would like to send the stream. Check *Multicast* if you need to send the stream to numerous machines.

In the *TTL* spin-box, specify the number of switchers the stream can pass (Time to Live).

To the right, modify the buffer size depending on your needs. Usually we recommend setting this size to 1316 (7 UPD packets of 188 bytes).

If you have more than one LAN cards in the machine, specify which one should be used for the streaming. Otherwise, the stream will be output through all network connections.

Check ☑*No capturing* if you do not want to save the incoming stream to a file. If you leave it unchecked, **CaptureBox** will write the stream to an MPEG2 TS file.

☑*Use File splitting* is active when **CaptureBox** writes the captured stream to a file (i.e. ☐*No capturing* is not checked). This functionality allows you produce chunks of files based on predefined periods. You can adjust the period (in seconds) in the *Split Time* box below.

USER INTERFACE
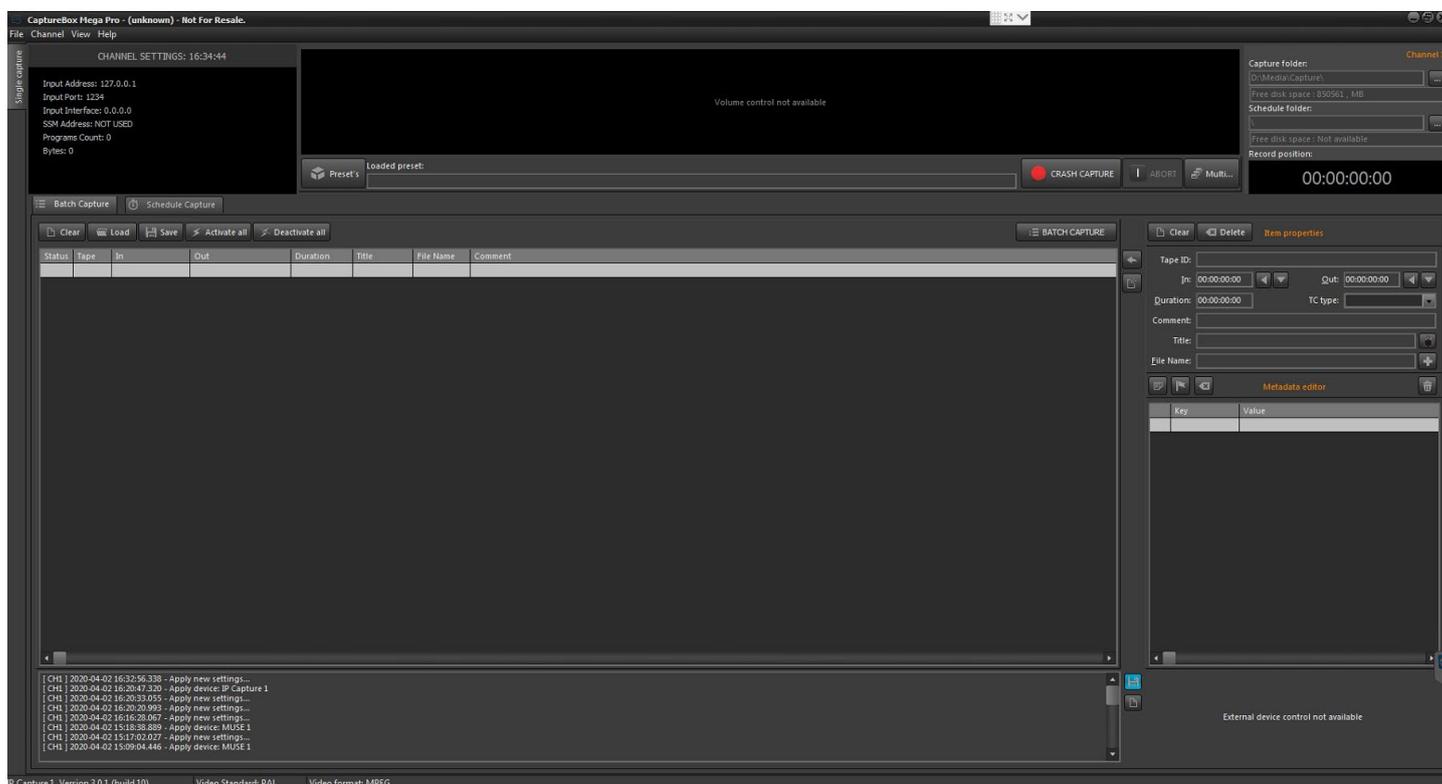
Capture Mode

When the **Capture Page** is active, the module is in "record" mode. In this mode, you can choose a batch of scenes from tapes, collect them in the batch capture list or record every single scene manually from a *VTR*.
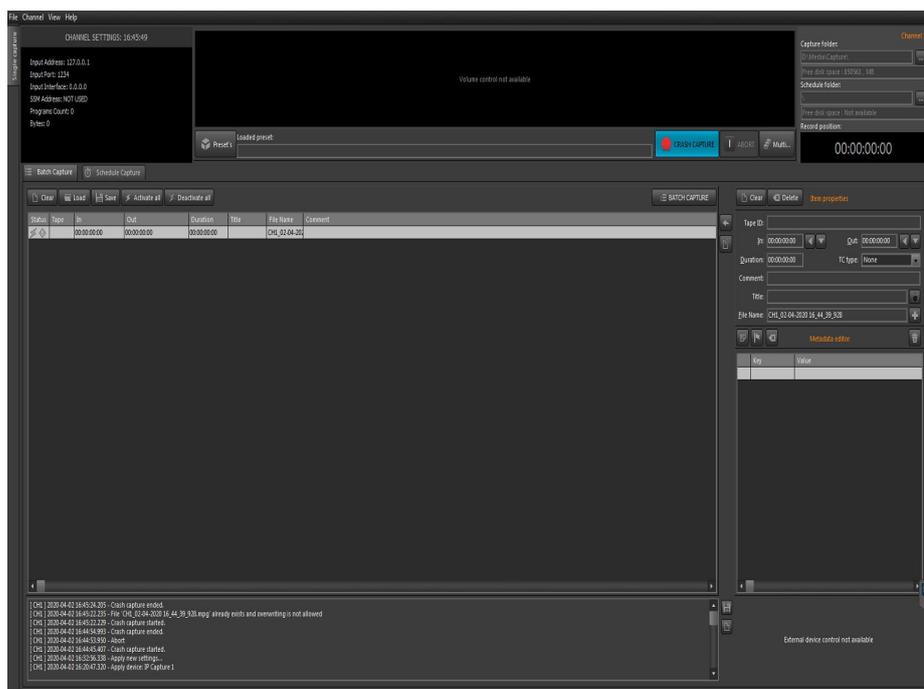
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Batch Grid

The automated batch capture grid occupies a large part of the window. Many people refer to this function as "batch capturing". You can define a list of scenes with their **start** and **end** timecode values. Then activate batch capturing. **CaptureBox** captures the desired scenes automatically from the corresponding tapes. The operator should only change the tapes when prompted.

Grid Columns:

- Status column shows the current state of each clip, as follows:

- If the clip has been successfully captured, a mark   appears.

- If the clip is captured, but there is no option for *VTR* control, a yellow hand appears, and the timecode values in the **In** and **Out** columns are zeroes.

- If not the whole clip has been captured, or there has been a problem during the capturing process, a red mark appears.

- If the clip is not captured yet, a "camera" appears.

- If the clip is included in the next **capture** session list, a blue dot appears. The dot can be removed by clicking that field. This will exclude the clip from the next capturing session.

- If the clip is not included in the next **capture** session, the blue dot is missing. The dot can be added by clicking that field. Thus, you will include the clip in the next capturing session.

  - Tape column shows the ID of the tape, from which the particular clip will be captured.

  - The **In** column shows the initial timecode, when clip capturing will start.

  - The **Out** column shows the timecode, when clip capturing will stop. If you click on the grey bar named **Out**, it will be renamed to **Duration** and the column will show the clips' durations.

  - Mode column shows what will be captured for the particular clip – video (V), audio (A) or both (VA). Currently only VA is supported.

  - The **Clip Name** column shows the clip names. If you click the grey bar named **Clip Name**, it will change to **File Name** and the column will display the destination full path where the clip will be stored – hard disk name, folder and file.

  - Comments column shows the comments (if any) for each clip. You can enter your comments in the relevant string of the clip data field to the right.

Grid buttons:

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- The **Blue dot** button includes the selected clip in the next capture session.

- The **Red X** button excludes the selected clip from the next capture session.

- The **Sync** button synchronizes the list. All clips with "not captured" status are included in the next capture session.

- The **Sort** button sorts the list by Tape ID and then by Start Timecode. Thus, the batch capture process is simplified and optimized.

- The **Capture** button starts an automated capture session. During this session, all clips, marked with a blue dot will be captured to the hard drive.

- **Delimited List Import** button enables loading all types of tab-delimited text files into the batch grid. You will have to create templates to "tell" **CaptureBox** what is the structure of your tab-delimited file, i.e. what information does each column contain.

- Pressing the **Delimited List Import** button will open a dialog for you to specify the template to use when loading your file.

The *Template preset* drop-down list contains all the templates stored in the **Template Folder** (see the **Template Builder** description below).

Select the *Action* you would like to execute from the drop-down list. You can either Insert, Append or Load the file. The latter action will delete all previously loaded entries in the batch grid.

Finally, browse for the file you would like to import using the selected template and click **OK**.

> **NOTE:** The **OK** button will not be active until you fill in all the strings in this dialog.

At opening this dialog for the first time, you will have to **create a template** first. First, select the **Template Folder** – all the templates you create will be stored there until you change it.

Push the **More** button to open the **Template Builder**.

Type the template name in the *Template:* string. If the selected templates folder already contains some template files, they will be listed in the drop-down list.

Push the **Sample File** button to open an example file for your template.

If there are some rows in the beginning of the file that you would like to skip, enter their number in the *Number of lines to skip* string. The skipped lines will be colored in red.

If there is a symbol in the beginning of each row in the file that you would like to skip, select it from the *Comment:* drop-down list. Then, specify the Delimiter from the drop-down list.

Now that you have set the basic rules, you will have to "explain" the **Template Builder** what information each column contains: Go to a column's header and click in it. Then select one metadata category from the drop-down list to assign it to the relevant column. Once assigned, this category will be checked in the *METADATA* list to the left. You can un-assign a category either through un-checking it in the METADATA list or by selecting [Clear] from the drop-down list.

Select [Bulk] if you wish to skip a column.

When the preset is ready, press the **Save** button to store it in the Templates folder.

Press the **Validate** button to check if the current template matches a specific file.

To load the currently selected template in the *Template preset* string, press the **Pick** button.

If you already have some templates and you select one of them from the drop-down list, push the **Load** button to load it (its settings will be displayed in the grid).

Back in the **Import Tab Delimited Playlist** dialog, you can set a default template by pushing the **Save As Default Template** button.

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- The **Folder** button allows loading a list, preliminary prepared in **CaptureBox** with clips ready for capturing (**.cap* file). The name of the current list is written in the title bar of the module, right after **CaptureBox**. If the list has been changed and not saved, an asterisk (*) appears after its name.

- The **Diskette** button saves the current capture list to a file, which can be used later.

- The **Clone** button "clones" the selected clip. Its data (title, file name, in/out point, duration) are copied in the right-hand panel for use in the next entry of the batch capture list. This functionality could save time for entering almost the same data for each row. Just change the different points and there it is!

- The **Edit** button allows changes in the description of a clip. The clip data are loaded into the Data Fields and you can edit them. During editing, the Edit button transforms to **Cancel** and the **Add to List** button transforms to **Apply.** By pressing the **Apply** button, your changes are applied in the list.

You can also edit a clip by double-clicking it.

- The **Delete** button removes the selected clip from the list.

- The **Compensation** button– invokes a dialog box for defining the capturing delay compensation (in frames), when you capture from video recorder. On some stations you must manually compensate for some delays when capturing to different formats (DV, MPEG2 AVI, MPG).

- The **Setup** button – shows a window for setting up Inputs/Outputs of device, capturing format and specific settings.

- The **Device select** button– allows choosing the capture device or software simulation of capturing (**Sample Driver**).

- The **Abort** button– it activates during the capture preparing only. Press it to stop the capture.

- The *Speed* field `x1` shows the speed of capturing.

- The *Timecode* field– shows the timecode during capturing.

Clip Data fields

This field is designated for clip description. It is not possible to include the clip in the batch capture list if you have not specified the clip location on the hard drive, the tape ID, the initial and the final timecode, as well as the clip name.

- *Folder* – this field describes the folder in which files will be captured. Pressing the **browse** button next to it opens a browse dialog box where you can specify a hard disk and a folder for storing the captured clip. Under the field you can see information about the free disk space at the selected disk.

- *Tape ID* – In this field you must type the ID of the source tape from which will be captured the footage. This is very important if you work with more than one tape or the tape timecode is not continuous. Later, during the batch capture session, you will be asked for tapes by their IDs.

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- *In* and *Out* fields specify the initial and the final timecode respectively. If you choose to fill-in the information manually, you could use either of the following separators: **colon (:), semi-colon (;), dot (.)** or **comma (,)**. Of course, you do not need to enter the leading zeros in any field.

> For example, if you enter 1.2.3 this will be translated to 00:01:02:03.

If you don't enter any disjunctive symbols in the timecode, this will be interpreted as a number of frames. For example, if you enter "100", this will be interpreted as 4 seconds (00:00:04:00).

- *Duration* – Its value is automatically calculated by subtracting *In* from *Out* values. It is possible to type a value only in the *In* field and define *Duration*. The value of *Out* field will be calculated automatically.

To the right of *In, Out* and *Duration* fields are situated buttons that function as follows:

- Pressing the **black arrow**, pointing left, will insert the current timecode from the *VTR* in the corresponding field

- Pressing the **red arrow**, pointing down, will rewind the tape exactly to the timecode, written in the corresponding field

- Pressing the **Clear** button clears all values in the *In, Out* and *Duration* fields.

In the *Comment* field you could enter a description or a comment, concerning the particular scene sequence. Your comment will be displayed in the relevant Grid column.

Title represents the name of the clip. If left empty, the field will be automatically filled-in with the corresponding *File name*.

- **Lock** button is used for locking the *Title* to the *File name*, i.e. any changes in the clip name will affect the file name and vice versa.

- *File Name* stands for the name under which the captured clip will be saved. If left empty, the field will be automatically filled-in with the *Title*.

For your convenience, the filename is automatically increased by pressing the **Plus** button or **Add to List** button. If the last clip name was [Capture00**1**], the next filename would be [Capture00**2**], and so on. If the filename does not end with a number, but with a letter, the letter will change in alphabetical order, i.e. if the last clip name was [Sofi**a**], the new filename will be [Sofi**b**], then [Sofi**c**] and so on. Of course, there is an option to enter a new name manually.

- **Plus** button increases the *File name*.

- **Add to List** button - transfers the clip data into the batch capture list (on the left) and most of the clip fields are cleared except *Tape ID* and *Folder*. The *File name* increases.

  - **Clear Clip** button - clears all clip data.

Capturing

There are three methods to start capturing:

- **Manual Capture**–this mode can be applied only if *Tape ID, File Name* and *Folder* fields are filled-in. If the timecode field *In* is empty, pressing this button will open a window for manual start of the capturing. If the *In* field contains timecode, **CaptureBox** will start counting down for the same amount of time before commencing the capture. Press **Finish** button to stop the capture.

- **Auto Capture** (automated single capture) – this mode can be started only if the *Tape ID, In, Out, File Name* and *Folder* fields are filled-in. When capturing is finished, the clip data is automatically moved into the batch list and marked as captured. There is no need of re-capturing, except when a blue dot is set in front of it. To stop the capturing manually, press the **Abort** button. Clip data will be moved to the batch list, but the clip will be marked as not fully captured.

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- ▪ The Batch Capture is in fact automated capturing of a series of scenes. Activate it with the **_Capture_** button, which is situated under the clip list. All the clips from the list that are marked with a blue dot will be captured in ascending sequence of the time codes and tape IDs. During this process, no special attendance is necessary– one should only take care of changing the tapes when prompted.

> **TIP (!)** You can adjust the preview window size by right-clicking in the preview window.

> **IMPORTANT:** The PlayBox modules DO NOT support the Deck Control connector, supplied on the DeckLink breakout cable!

Using the Time Delay – Instant Replay option (TDIR)

TDIR functionality is available only for *.mpg files, i.e. for plug-ins, where *.mpg files are supported.

To use the TDIR option, launch **_AirBox_** and right-click over the grid. Choose **Add/Insert Incomplete clip** from the context menu. You can also **Add/Insert Incomplete clip**s from the **Edit** menu.

In the Clip Properties dialog, browse and point the location where the clip will be captured. Type the Filename and copy it (**<Ctrl** + **C>**), you will need it later in **_CaptureBox_**. Start the playback.

Next, run **_CaptureBox_** and prepare for capturing - make the necessary settings and fill in the _Clip Data fields_. Use **<Ctrl** + **V>** to paste the filename you copied from **_AirBox_**.

There should be at least 5 seconds between the capture start and the start of the incomplete file's playback.

Here is an example of setting this function. In it, a clip that is still being captured will be played back in **_AirBox_** for 20 seconds:

1. Open **_AirBox_**

2. In the **Settings** menu➜**Settings** dialog, set _Check Missing_ every [3] seconds and click **_OK_**.

3. Load a playlist; right-click and select **Insert/Incomplete clip**.

4. In the **Clip Properties** dialog, type in the title and the filename.

5. Use **<Ctrl** + **C>** to copy the file name, you will need it later.

6. Browse for the location to which the clip will be captured. Then set the _Duration_ to [20] seconds. In the bottom of the Clip Properties dialog, check ☑_Live (delayed) file_ and clip and set duration ().

7. Push Play. The incomplete file is marked Missing as it still does not exist.

8. Open **_CaptureBox_** and specify the Folder you will capture to,

9. the clip name and the filename (Use **Ctrl** + **V** to paste from **_AirBox_**)

10. Start manual capturing.

11. A few seconds later the incomplete clip will become available, but it will still be marked as missing as it was inserted before it was created.

12. It will be played for 20 seconds as specified in its properties.

13. When **_AirBox_** starts playing the next clip, you can go to **_CaptureBox_** and stop capturing (if needed).

> **(!) TIP:** You could fully automate this process using the **_CaptureBox_** scheduler. Prepare your schedule-capturing list and insert the incomplete (still missing) clips in the **_AirBox_** playlist accordingly. Thus, if you have set the correct timing, **_CaptureBox_** will start capturing and **_AirBox_** will start playing back the relevant clips.

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RS-422 Controller

Each *VTR* with *RS-422* **SONY** protocol can be used in **CaptureBox**. Switching the active window between the main and this one is done by pressing the **<Insert>** key. It is possible to attach this window to the main one by moving it close to any of its edges. Thus, the *VTR* control panel will move together with the main window. Here is a short description of the *VTR* control panel:

- The *VTR* brand is displayed in the window's caption. If there is no connection, the text [Not Connected] will appear.

- Display Indicators:

- **TCR** has three possible states – **TCR** (normally read timecode), **T*R** (corrected timecode), **TCG** (generated timecode, red).

- **RecInh** a record-protected tape is inserted in the *VTR*.

- **Local** indicates that the *VTR* is in local control mode and the remote control is not possible.

- **Tape** indicates that there is a tape in the *VTR*.

- **EOT** (End-Of-Tape) alarms that the tape is about to end or that the tape end has actually been reached.

- Indicator **>>** or **<<** - shows the tape roll direction.

- **Preroll** indicator informs that the *VTR* is executing a preroll command.

- **Servo** indicator shows that playback is running stable.

- **CueUp** indicator – shows that the timecode positioning command has been successfully completed.

- *Tape/AutoEE* and *Full EE* – depending on *VTR*'s model and its settings, a combination of these keys opens the **E-E** circuitry.

- **Config** button – opens a configuration dialog box, where you can define:
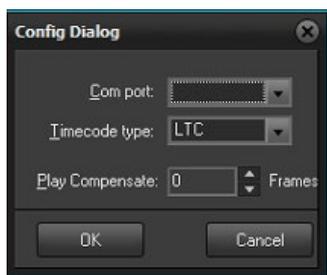
- *Com port* – the port to which the recorder is connected.

- *Timecode type* – the type of the timecode: LTC, VITC, etc.

- *Play Delay* – the delay (in frames) of the video recorder start towards the capturing start. This setting refers to the **Capture mode**.

- *REC Delay* – the delay (in frames) of the clip start towards the video recording start. This setting refers to the **Print-to-tape mode**.

- *REC Latency* – the frame offset of the records beginning toward the clips *IN* point. This setting refers to the **Print-to-tape mode.**

CaptureBox User Manual

- *Always on top* **–** check it, if you want to seetheRS422 window always on top.

- *Editing VCR*– it should be checked, if you use an editing video recorder. If the box is checked, you can set the *REC delay* and *REC latency* fields and the *Video recorder edit mode*.

- *Video recorder edit mode* – you can choose between *Insert* and *Assemble*.

- *RecInh* box– allows or forbids the **REC** button in order to protect the tape from accidental mistakes.

- The *Shuttle* slider – allows shuttling within the particular *VTR* capabilities. If the *VTR* allows it, you could achieve variable speed by shifting this button left or right.

- The *Jog* slider allows frame-accurate positioning.
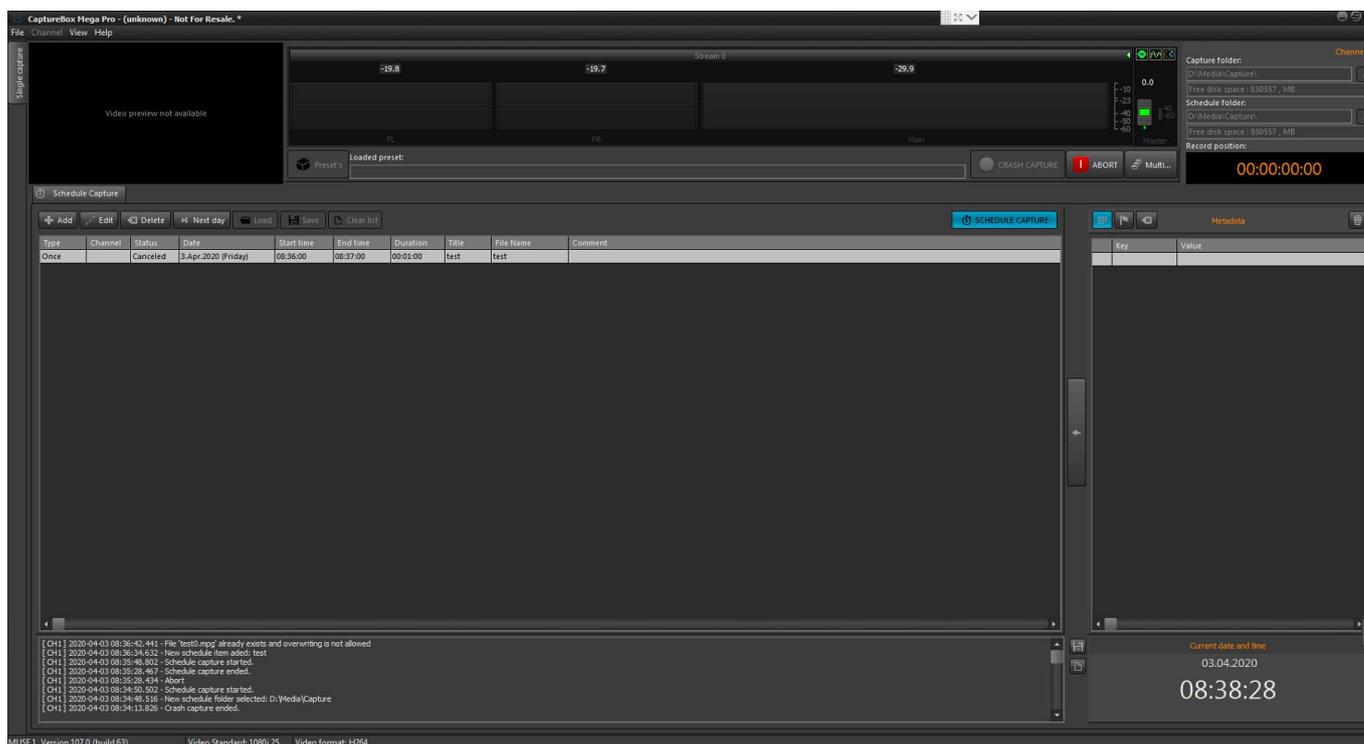
Schedule

When the **Schedule** page is active, the module is in "schedule" mode. In this mode, you can define a capturing schedule and start capturing later.

The **Schedule** mode interface is similar to the **Capture** mode interface. There are several differences in Clip description and Grid buttons.

Schedule Grid

The grid occupies a large part of the window. In it, you can create a list of scenes that will be captured after activating the scheduling. This feature is used mainly for capturing TV and satellite signals, but of course, you can capture *VTR* signals as well.

Grid Columns:

Type – shows the schedule type: daily, weekly, etc.

Channel – the TV channel which will be captured.

Date – the starting date of each capture item.

Start – shows the initial time, when clip capturing will start.

End – shows the time, when clip capturing will end. If you click on the grey bar named **End**, it will change to **Duration** and the column will display clip durations.

Mode –shows what will be captured for the particular clip – video (V), audio (A) or both (VA).

Clip Name – contains clip names. If you click the grey bar called **Clip Name** it will change to **File Name** and the column will display the destination pull path where the clip will be stored – hard disk name, folder and file.

Comments –shows the comments for each clip.

Grid buttons:

Show days field– here you can define how many days in advance (counting from today) you will see in the schedule list.

Press the **Crash Capture** button [CRASH CAPTURE] after creating the schedule list. This will activate the schedule capturing mode. The capturing will automatically start and stop, according to the "Start time" and "End time" values entered in the list.

Clone "clones" the selected clip. Its data (type, channel, in/out point, duration) is copied for use in the next clip to be included in the schedule list.

Edit button changes the description of the clip. The clip data are loaded into the Data Fields and you can change them. During editing, the **Edit** button transforms to **Cancel** and **Add to List** button transforms to **Apply.** The changes you've made will be applied in the list by pressing the **Apply** button. You can also edit a clip in the list by double-clicking it.

Delete button removes the selected clip from the list.
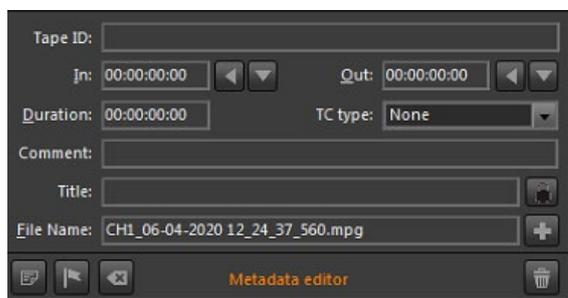
If you select a grid entry and press the **Tomorrow** button a new entry to the list will be created. It will have the same data as that of the selected entry, but its starting day will be on the following day. In short, this button performs a kind of "tomorrow cloning".

Clip Data Fields

The *Folder* field contains information about the file location of the captured clip. Pressing the browse button next to it opens a browse dialog box, where you can specify a hard disk and a folder for storing the clip.

Under the field, you can see information about the free disk space on the selected hard drive.

The Channel field contains information about the TV channel which will be captured. You can select it from the list of available channels in the left string or create it in the field next to it.

Pressing the satellite [icon] button, opens a dialog box in which you can create the list of up to 16 channels. You can add a new channel by double clicking in an empty line and typing the channel name.

Start time/End time - specify the initial and the final time respectively.

> **NOTE:** These must be in 24-hours' time format! AM/PM is not supported!

Duration – Its value is automatically calculated by subtracting *Start* from *End* values.

Date **–** the capture starting date.

Type **–** defines the frequency of capturing – once, every day, or every week.

Comment - contains a description or a comment, concerning the particular scene sequence.

The *Clip Name* field contains the name of the clip you're going to capture. If you leave the field empty, it will be automatically filled-in with the corresponding file name.

The **Lock** button is used for locking the *Clip name* to the *File name*. Any changes you make in either field will automatically occur in the other.

In the *File Name* field you can enter a name for the captured file. If the field is left empty, it will be automatically filled with the *Clip name*.

Add to List button transfers the clip data into the schedule capture list.

Clear Clip button clears all clip data.

Crash Capture button begins capturing of the available channel immediately and without confirmation, irrespective of the entered schedule list.

Prepare Capture – opens a dialog box asking for confirmation to begin capturing of the available channel instantly, independent of the entered schedule list.

MENU BAR

File Menu

Open

This command opens a previously created Capture list (*.cap*) or Schedule list (*.lst*).

Save

Press it to save the current Capture list (*.cap*) or Schedule list (*.lst*).

Kramer Config

In **Schedule mode**, you can list up to 16 channels to be captured. Use a Kramer device to switch between them automatically. You can also switch the channels manually via the *Manual Channel Switch*. In the *Machine* field, enter the number of the Kramer switcher used (there could be up to 8 switchers connected to the PC).

If you press the **Advanced** button, the following dialog will open for you to specify the interface settings:

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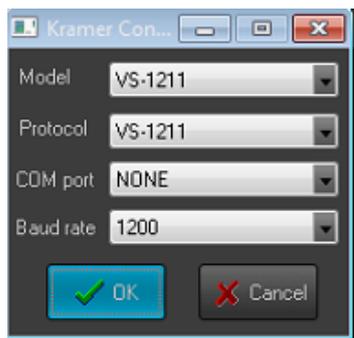
Select your Kramer switcher model from the drop-down *Model* list.

In the *Protocol* field, specify what protocol it uses.

Assign the *COM port* for the switcher using the drop-down list of available COM ports.

Set the *Baud rate* according to the Kramer switcher manual.

GPI Config

Capturing can be initiated or stopped from an external *GPI* device. This option is valid for manual capture only. You can connect up to 8 *GPI*-devices. Each of them can send up to 4 *GPI* commands. Each device must be associated with an available *COM* port on the computer.

To assign a device, select it from the list to the left and specify to which COM port you will connect it.

In the *Pulse Level* field to the right, you can specify the type of the trigger pulse. Below, set the GPI commands from the relevant drop-down lists.

The pins involved in **CaptureBox** GPI are the same as of **AirBox** GPI. For more information about the *GPI* interface and pins involved, look up in **Appendix 1** further in this manual.

DTMF Config

The DTMF reader allows the user to slave **CaptureBox** to external DTMF tones that arrive on the sound card of the PC. Currently it works only in Capture mode and the supported commands are Start and Finish.

A two-tab dialog will open on selecting this menu item.

In the **Plug-in** tab, specify the device to which is connected the DTMF carrying cable.

In the *Source audio channel* field below, select which channel is carrying the DMTF tones.

In the **Commands** tab, create a list of commands to be executed at receiving certain combination of tones.

First enter the command's Name in the string above. Then, specify the sequence of tones that will trigger this command. Finally, select the Command in the drop-down list.

Press the ![save] **Save Preset** button in the upper left to save the command parameters.

Repeat the procedure to add commands to the list in the right.

To delete a command, select it and press the ![delete] **Delete** button.

Thus, each time this tone sequence appears on the PC sound card, **CaptureBox** will execute the selected command.

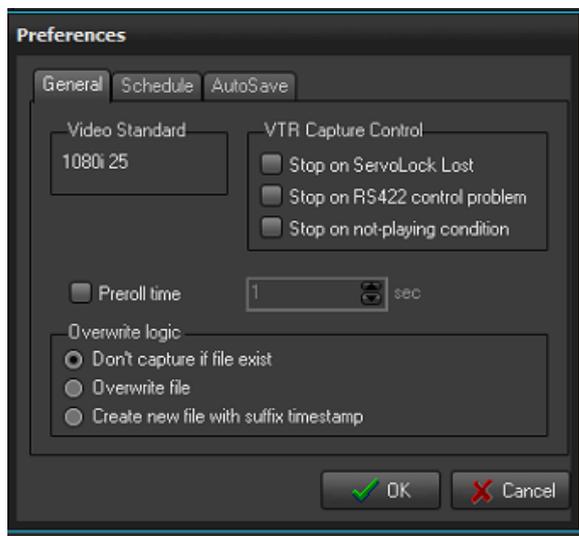> **NOTE:** The DTMF reader operates only in Capture mode! It will not execute commands while **CaptureBox** is running in Schedule mode!

CaptureBox User Manual

Preferences

The preferences dialog box consists of three pages:

In the **General** page you can check the current video standard which depends on the selected plug-in.

The video standard can be changed in the specific set up form of the plug-in (if the relevant plug-in supports this functionality). The current video standard is also displayed in the bottom of the main **CaptureBox** window. If you want **CaptureBox** to start minimized, check ☑*Start in system tray*.

TCI files are automatically generated during capturing. They contain information about the tape ID, In and Out time code on the tape, as well as clip duration and notes on the captured files. Most of this information can be imported in **DataBox** for automated creation of new records in the database. Please check the TCI Import section in **DataBox➔Options** description.

The time codes in *.tci files can be read by the Clip trimmer for subtitling purposes. If you do not need them, uncheck ☑*Create TCI files*, which is checked by default.

☑ *Stop on ServoLock Lost* – this option is designed to prevent bad video capturing. If for some reason, the VTR reports lost servo lock **CaptureBox** will stop capturing and will send a Stop command to the VTR. Thus, you will be able to see the exact position of the bad tape.

☑ *Stop on RS422 control problem*– if this box is checked **CaptureBox** will stop ingesting in case the RS422 is disconnected. This is especially useful in batch capturing, since the file duration is kept.

☑ *Stop on not-playing condition*– if this box is checked **CaptureBox** will stop ingesting if the VTR is not in playing state, i.e., it is stopped, paused, rewinding/forwarding, or is in a go-to state

☑ *Preroll time in seconds*–if checked, this box allows you to set a custom preroll time via the spin-box below.

☑ *Overwrite file if already exists* – if you check this box, if a file with the same name as the currently captured file exists, it will be automatically overwritten

In the **Schedule** page, you can define Naming Type for the captured files. They are AUTOMATICALLY formed using the original filename entered in the File Name field (while in Schedule mode) plus some kind of index to distinguish them from one another:

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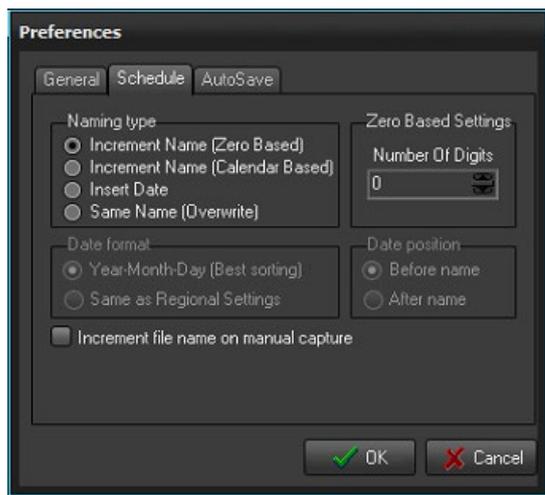
⊙ *Increment name (Zero Based)* –the consequent file names will be formed by adding increasing numbers to the original file name. The number in the original file name is always zero; therefore, this naming type is called "Zero-based". In the Zero Based Settings field, you can specify the number of digits to be displayed.

⊙ *Increment name (Calendar Based)* –the names of consequent files will be formed by adding the subsequent calendar number of the capturing day to the original file name (this number may vary from 1 to 365/366 – in leap years).

⊙ *Insert date* – inserts the capturing date in the filename. If you choose this, the Date position (choose position before or after the file name) and Date format fields will become active.

⊙ *Same name (Overwrite)* – Thus, each time **CaptureBox** starts schedule capturing, it will write the data to the same file.

Below, you can specify the date format and position.

> **NOTE:** File name incrementing is valid only for Schedule mode, for more than one capturing session (daily or weekly repetition).

The **AutoSave** page allows enabling automatic storing of capture lists. In it, you can also define the auto-save period in minutes by checking the ☑*Enable List AutoSave* box and entering the period in minutes.
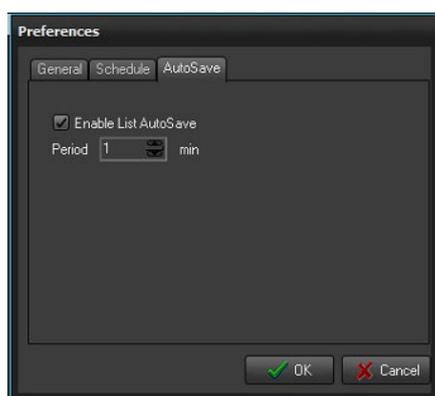
RS-422 Config

This command shows the volume mixer of the available audio device.

Audio Mixer is used in Windws XP when is used MATROX DIGISUITE - it open Windows Audio Mixer. We don`t use Windows XP and Matrox board so it is good to remove Audio Mixer menu from CaptureBox menu.

Exit

Click it to close **CaptureBox.**

CaptureBox User Manual

View Menu

Use this menu to open some additional windows to the main *CaptureBox* window:

Preview Window

You can use it to monitor the video currently present on the encoder input.

Sony transport

This command shows the *RS422* controller window. The RS422 controller is described profoundly above, in the User Interface section.
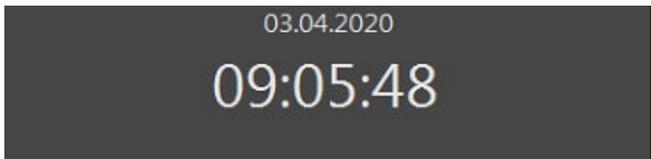
FireWire Transport

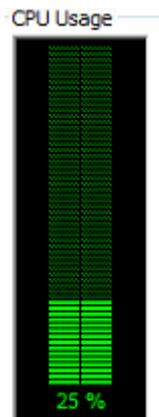This command shows the *FireWire (IEEE – 1394)* controller windows.

Volume Meter

Shows the *volume & peak meter* for the currently captured audio. The Volume & peak Meter is described in more details in the *AirBox* chapter above.

Timer

This command displays the system time window.

CPU Monitor

Capturing on some hardware platforms is quite CPU-intense. To prevent poor encoding and frame-dropping, *CaptureBox* has an automatic protection which will stop the capture if the CPU usage goes above 85%. This monitor will help you predict such possible situations and set your PC prior to starting the capture.

A drop-down menu activates on right-clicking in this window. In it, you can select which CPU to view (if there is more than one). Besides, you can view all CPUs simultaneously, or an average value of the CPUs' usage.

> **(!) TIP:** You can arrange all windows together by pressing **<Shift+F12>**

CaptureBox User Manual

Capture Menu

Compensation

It invokes a dialog box for adjusting the capturing delay compensation (in frames). The capturing delay is hardware specific, so the values in this dialog are determined after the method test and mistake.

Setup

It opens a capture setting dialog box. This command duplicates the ***SetUp*** button situated under the batch capture grid. The dialog box is different, according to the encoder used. See the Capture Settings section to view the description of some encoders' setting dialogs.

Device select

It opens a dialog box for choosing the capture device.

Capture

It is active only when you work in Capture mode (the Capture tab is selected). It provides three options that duplicate the relevant buttons under the clip data fields:

- **Batch Capture** starts the batch capturing (following a predefined list)

- **Auto Capture** starts auto capturing – the program will control the VTR

- **Manual Capture** starts recording the currently available video source. A dialog box will appear prompting for your confirmation.

Schedule

It is active, only when you are working in ***Schedule mode***.

- **Arm** – activates the schedule.

- **Prepare** – activates manual capturing from the currently available video source. A dialog box will appear prompting for your confirmation.

- **Crash** – starts capturing immediately from the currently available source, without asking any further confirmation.
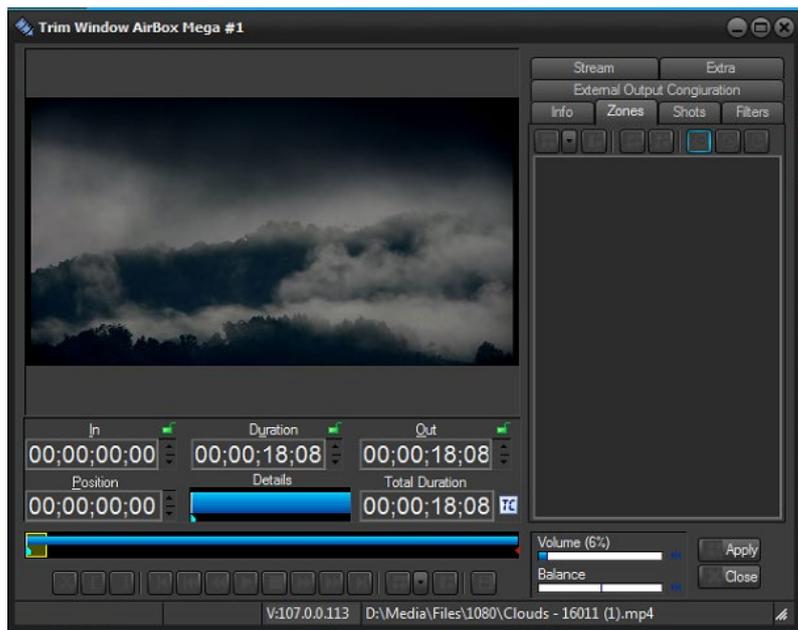
CLIP TRIMMER

The **Clip Trimmer** is used for previewing and trimming clips in **ListBox, DataBox** and **AirBox** modules. You can preview clips even during the on-air playback in **AirBox**.

Trimmer allows marking IN and Out points for video playout and then the player (**AirBox**) plays the video exactly between these points. This way no real cutting of the file is performed.

USER INTERFACE

It combines a *VGA* preview screen and tools for editing the *In* and *Out* points of *MPEG* clips. .

Clips are loaded into the **Trim Window** by double-clicking on them in **ListBox, DataBox** or **AirBox** modules.

The trimmer window has a number of keyboard shortcuts that are listed in the shortcuts leaflet in the PlayBox customer's package.

Preview Screen

The Preview screen occupies the largest part of the Trim Window. It shows the video clip which is being trimmed.

Pressing the right mouse button over the **Preview screen** invokes a context menu with the most frequently used commands in the **Trimmer**.

Trimmer Control
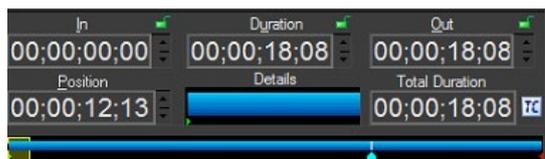
Once a clip is loaded, you can navigate and edit it, using the **Clip Trimmer** controls.

The following boxes are situated under the preview window:

In box – displays the In point timecode

*Out*box –displays the Out point timecode

Duration box – displays the clip duration. It is equal to the difference between *In* and *Out* points.

After entering the In and Out timecodes, the Duration value will be calculated automatically. Moreover, after entering the In and Duration values, the Out point timecode will be calculated automatically. It is possible to lock the In, Out or Duration value (but not all the three of them, of course) by clicking on the lock icon to the right of the box. Thus, you can protect their values from changing (by mistake, for example).

To enter values in the In, Out or Duration box, you can use the arrows beside them or type numbers in the boxes.

Position box contains the timecode of the currently selected point in the clip. If you type another timecode in this box and press **<Enter>**, the marker will move to the relevant position.

Total Duration box – displays the original, untrimmed duration of the clip.

Details box – it shows the part of the clip, enclosed in the zoom frame.

The *Trim bar* visualizes the clip length and the clip markers.

The *Zoom frame* is a yellow square in the trim bar. It defines what part of the clip is being shown in the Detail View. It is quite useful for long clips. You can move or resize the zoom frame, by mouse dragging. You can define a new Zoom area by drawing a rectangle through dragging the mouse while holding its right button.

SPLIT button - splits the clip and thus defines separate sections in the clip. After splitting the clip, each new clip section appears as a separate row in the play list. You can play them separately, change their order, insert other clips between them, etc.

You can define *In/Out* points for each section of the split clip. The *In, Out* and *Duration* boxes display information about the selected section. Multiple In/Out definitions are used for skipping some parts of the clip during its playback. Thus, you can exclude existing commercials, titles, etc. from the original clip.

You can create separate sections also by pressing repeatedly the **In/Out** buttons. Pressing the **In** button after an existing *Out*point, creates a new section after the existing one. Pressing the **Out** button before an existing *In* point, creates a new section before the existing one.

IN button – marks the *In* point for start of playback in **AirBox**. The *IN* point marker is colored green and by default it is at the beginning of the clip.

OUT button – marks the *Out* point for end of playback in **AirBox**. The *OUT* point marker is colored red and by default it is at the end of the clip.

You can set an *In/Out* point, by dragging the *IN/OUT* marker on the trim bar or by entering timecode directly into the *IN/OUT* box.

The *IN/OUT* markers show the frame before/after (i.e. if the marker is on the *Out* point, you actually see the next frame, but not the last frame of the trimmed part.).

NOTE: For MPEG files, the trimming is *GOP* accurate! *IN* points can be positioned only on I-frames, while OUT points can be positioned on I- or P-frames. Depending on the stream's *GOP* size, this may lead to a slight inaccuracy, limited to half a *GOP* for the *IN* points and a couple of frames for the OUT points. If the stream's *GOP* size is one (I-frames only), then trimming will be frame accurate.

NOTE: Even if you specify In and Out points in a particular timecode, some playout plug-ins (for ex. IPPUMP) will correct them to nearest I-frame for IN point or I- or P-frames for OUT point. Thus outputted duration could be shorter then specified.

Play button starts playing the clip. Then it transforms to pause/resume.

If you want to play only the trimmed part (i.e. between the *IN* and *OUT* points), press **<Shift>** + **Play**.

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Stop button ▢ stops the playback and "rewinds" the clip to its beginning.

Pause ▢/**Resume** ▢ button. It stops and resumes the clip playback from the same timecode position.

Button ▢ - skips one frame forward

Button ▢ - reverts to one frame backward

Button ▢ - fast forward (if it is possible)

Button ▢ - rewind (if possible)

Button ▢ - moves to the next mark point (in/out/bookmark)

Button ▢ - moves to the previous mark point (in/out/bookmark)

Add Zone button ▢ - marks the beginning of a zone. A yellow point appears in the trim bar.

Delete Zone button ▢ - deletes the selected zone point.

Open button will load a clip in the Trimmer window.

Export button ▢ - opens a dialog box for exporting the trimmed clip as a file.

If you have divided the clip into several sections, they will appear in the **Export list** as different parts. Select which of them to export by checking the checkboxes in front the relevant section. Besides, you can change their order using the up and down arrows.
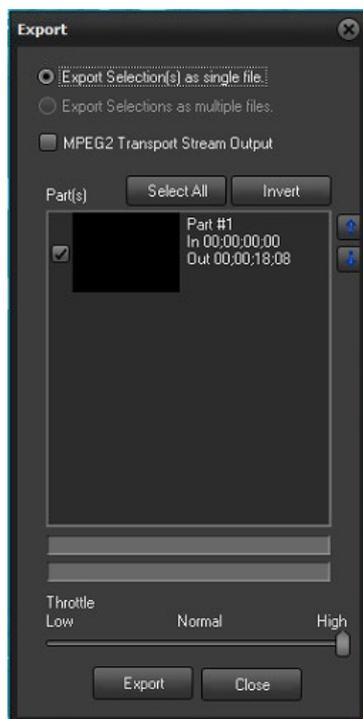
If you choose to export several parts at a time, you have to specify the way they should be exported: as separate files *(⊙Export selection(s) as multiple files)* or as a single file *(⊙ Export selections as a single file)*.

Pressing the **Export** button in this dialog opens another dialog box for you to specify the file name and store location and to begin the export.

To delete a clip section, select it and press **<Ctrl>**+**<D>**.

To reset the original clip length, press **<Ctrl>**+**<BkSp>**.

The *Throttle* has three levels – Low, Normal and High. Each of them "tells" the CPU what priority to give to the export process.

The higher the priority, the slower the other simultaneously running processes on the machine, and the quicker the export made.

> **IMPORTANT!** Export works only for MPEG2 files.
>
> **NOTE:** Export is not frame accurate. It is *GOP* accurate! *IN* points can be positioned only on I-frames, while OUT points can be positioned on I- or P-frames. Depending on the stream's *GOP* size, this may lead to a slight inaccuracy, limited to half a *GOP* for the *IN* points and a couple of frames for the OUT points. If the stream's *GOP* size is one (I-frames only), then trimming will be frame accurate.

Volume Control

You can change the audio volume and audio balance of the clip, using the relevant sliders in the **Clip Trimmer**. The new values will not take effect in **AirBox** playback. These sliders are used for convenience during the trimming process.

Volume box – shows the volume level of the clip playback. There is a reset button beside the slider to restore the default value.

Balance box – shows the clip playback L-R balance. There is a reset button beside the slider to restore the default value.

Status Bar

It is located along the lowest part of **Trimmer** window.

- The first field [Position] – shows the current timecode, when dragging over the trim bar.

- The second field [Zoom Frame] – shows the scale of the Zoom zone.

- The third field [Version] – displays the current **Trimmer** version.

- The last field shows the clip's filename and location.

TRIMMER PAGES

There are six pages on the right side of the **Trimmer** Window: **Info**, **Zones**, **Shots**, **Filters**, **Stream** and **Extra**.

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Video Clip Info

This page shows important system stream information, extracted from the file. It contains:

- Filename
- Video compression type
- Video stream information: number of streams; image width and height in pixels; video frame rate; video bitrate.
- Audio stream information: number of streams; audio compression type; audio sampling rate; audio channels; audio bitrate.
- Type of *MPEG* packages
- Type of *PES* (packetized elementary stream)
- Mux rate (the multiplexing rate in bps)
- Duration of the clip in HH:MM:SS.ms (hours: minutes: seconds. milliseconds)

Clip Zones
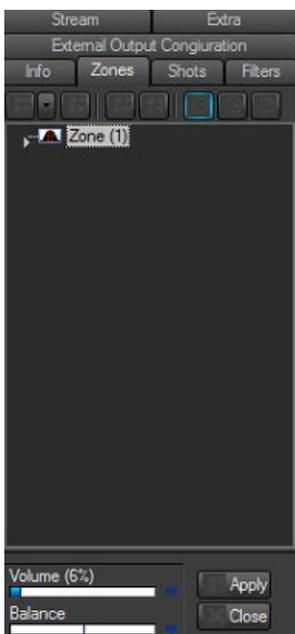
This page is used for registering a set of timecodes (points) in the clip. Thus, you can mark an initial or final timecode of an important zone in the clip. For example, in each movie there are predefined commercial break points that might be used later for automated commercial slot insertion. Those breakpoints can be defined in **Clip Trimmer** as single split points or zones (blank/stills) that will be skipped, and a commercial slot will be inserted instead.

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To add a **Zone**, set the cursor at the appropriate point and press the ***Add Zone*** button in the page or in the main window. A **yellow point** appears in the trim bar, showing the beginning of the zone. You can define different zone types, pressing the black arrow of the ***Add Zone*** button. It opens a button menu:

- **Bookmark** – creates a single split point at the current play head position. You can change the Zone name (Bookmark by default) and timecode manually.

- **Simple skip zone** – creates a two-point zone. The first point is the current play head position; and the second is 5 seconds later, by default. You can change the Zone name and timecodes manually.

- **Advanced skip zone** – creates a four-point zone. The first point is set at the current play-head position. By default the second point is 1 second later, the third point is 5 seconds later and the fourth point is 6 seconds later. You can change the Zone name (Advanced Zone by default) and timecodes manually.

To add a next marker in the **Zone**, press the ***Add Zone marker*** button. It will add a marker 10 seconds after the last marker in that zone, by default.

To delete a marker from the **Zone**, select it and press the ***Delete Zone marker*** button. It will delete all markers, except the first one, which can be deleted only by deleting the whole zone.

To delete a **Zone**, select it and press the ***Delete Zone*** button from the page or from the main window.

By pressing the Clock buttons, you can choose a display mode of the markers:

- **Time** – shows exact timecodes in HH:MM:SS:FF format

- **Offset value** – shows the interval between the current marker and the first one.

- **Duration** – shows the time difference between two consecutive zone markers.

Clip Shots

Use this page to extract shots from the video clip.

To create a shot, stop the play-head at the desired frame and press the **_Add_** [button icon] button. The shot, as a thumbnail and its time-code are displayed in the tab. You can change the shot's name (Scene No., by default) manually.

To delete a shot, select it and press the **_Delete_** [button icon] button.

To extract a shot to a file, select it and press the **_Export_** [button icon] button. A browse window appears to select the file name, type (***.jpg** or ***.bmp**) and location.

To set a shot as thumbnail of a file, press the **_Thumbnail_** [button icon] button.

Clip Streams
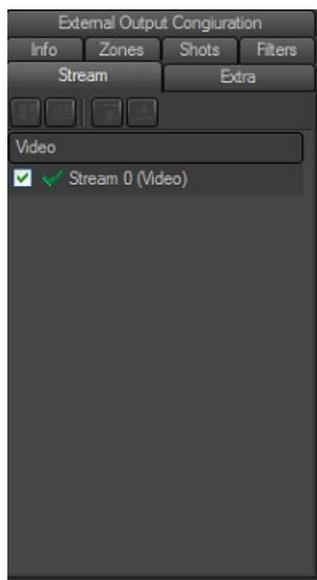
This feature is applicable in case the file contains more than one video and/or audio stream. Here you can choose which of them to view/listen during playback.

The check boxes ☑ in front the relevant streams show their playback status. The checked streams will be loaded in the playlist after clicking [✔ OK icon] and will be played in their turn.

The green ticks [tick icons] serve for previewing the desired streams – if you click on the single tick, you will preview only the selected stream. If you click on the double tick, you will preview all the streams simultaneously. If you preview several audio streams, they will be mixed-up. If the streams are video, the preview window will split according to the number of streams (up to 32).

Use the blue arrows [arrow icons] to move streams up and down the list.

Extra
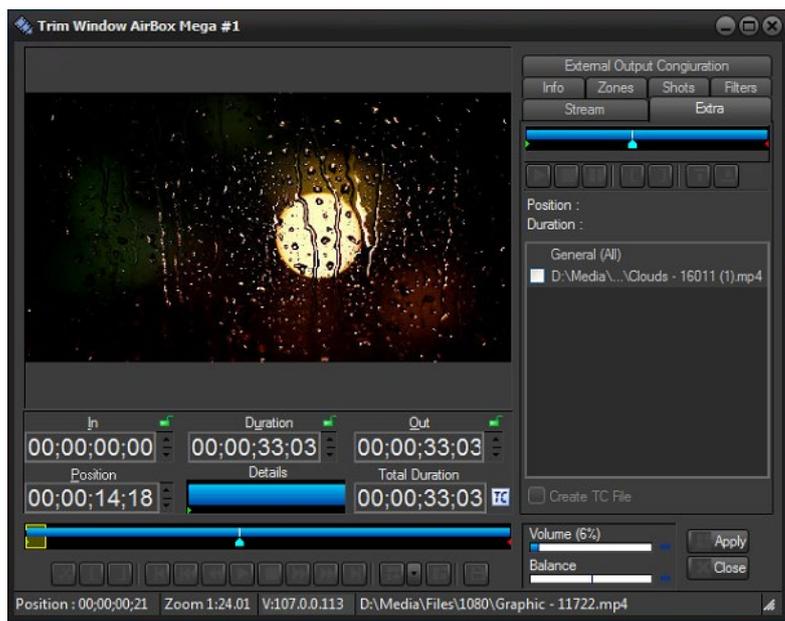
This "extra" will help you in managing multiple monitor video wall systems of up to 16 monitors. The files that are usually used for video walls end in *.c#.mpg* or *.c#.avi* (for example *.c1.mpg* or *c3.avi)*. Just load the first file in the playlist. ***AirBox*** will detect the others automatically.

The trim bar and the buttons above the list of files are designed for control of the entire bunch. The trim bar and the buttons under the preview window are used for control of the currently selected monitor (the one in the red dotted-line frame).

This feature will help you in synchronizing the video wall and will allow you to control each monitor separately. You can also rearrange the display positions of files by drag-and-dropping the relevant squares in the preview window (i.e. file #1 can be displayed on monitor#3, etc.) or by using the blue arrows above the file list. The files in the preview window are arranged horizontally, in up to 4 rows of up to 4 files each. This means that if there are 16 files in the bunch (the most possible), the first row will contain files #1 to #4, the second one will contain files #5 to 8#, etc.

The ☑*Create TC file* check box is situated at the bottom of the file list. If you check this box, a TC file will be created automatically, saving you settings, such as *In* and *Out* points, file order, etc. Thus you will be able to use your settings again the next time you open the relevant file.

Clip Filters

This tab provides information about the filters that participate in playing the current clip and an opportunity for changing the filters' settings.

The Windows Registry contains a key [*HKEY_CURRENT_USER\Software\Digital Media Technologies Ltd.\PlayBox\2.0\DXPresets*] in which you could create your own string values, containing groups of preferred filters (presets). All filters of the currently selected preset are displayed in **Filters** page.

There is a legend at the bottom of the page:

The ✚ sign marks all filters from the preset.

The ✚ sign marks filters that are included in the preset, but do not participate in executing the current particular file.

There is a **Property** button right under the tab name. Pushing it will open the property page (if any) of the selected filter. You could change the filter's setting there.

External Output Configuration
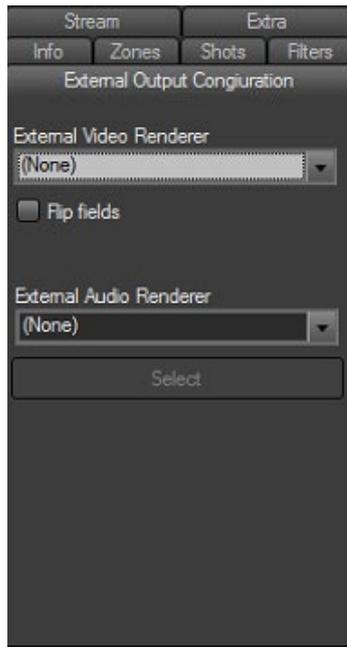
This tab allows you to select an *External Video Renderer*, as well as an *External Audio Renderer* from the corresponding drop-down lists. For the video renderer you are able to flip the fields of the output video by checking the ☑*Flip fields* box. In case the external audio renderer is multi-audio, then the first 8 audio channels are output in SDI. Once you are done selecting your external video and audio renderers, press the **Select** button.

PlayBox Live Inputs View

PlayBox Live Inputs View is an additional application which is installed together with *AirBox*.
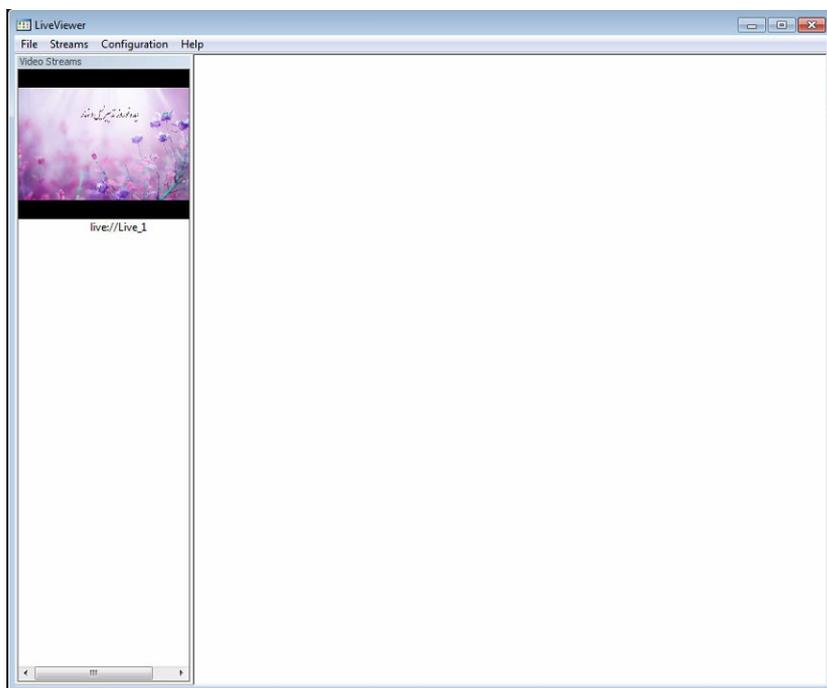
GETTING STARTED

Installation

Where to install it

PlayBox Live Inputs View is usually installed under folder **C:\Program Files\PlayBox Technology Ltd\UDP Switcher**

The *PlayBox Live Inputs View* icon will appear in the **Toolbar** .

USER INTERFACE

The main purpose of the *PlayBox Live Inputs View* is to preview the video, which is defined as live event in *AirBox*.


In order to see preview of the video source, first you have to set some video sources in *AirBox* from the ***AirBox* menu ➜ Settings ⇨ Live Inputs** tab.

**IMPORTANT!** You have to restart *AirBox* after setting up the video sources.

Now you are ready to open *PlayBox Live Inputs View*. Go to the **Streams** menu ➔**Add / Remove stream** and notice that a *Preview List* with already defined live video sources can be found there. It looks like the image to below:
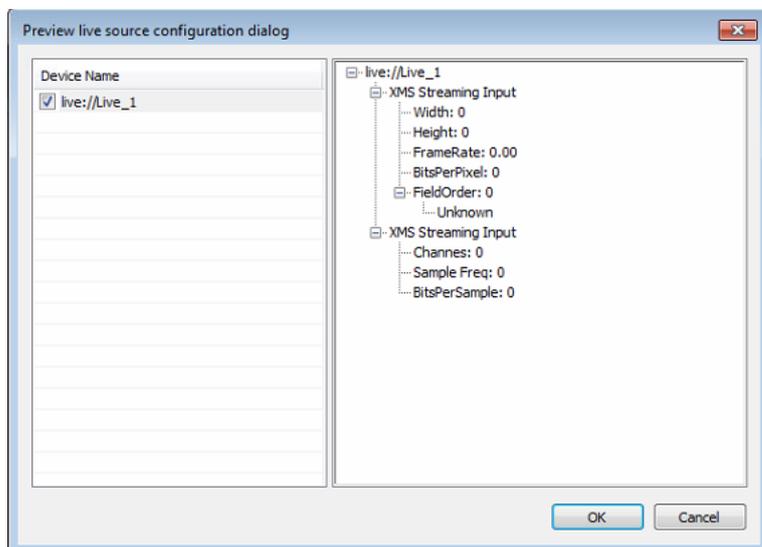
In the *Device Name* field check the respective source names of the sources you would like to preview in the *PlayBox Live Inputs View* and press **OK** button.

To remove a video source from a list, just un-check the device name from the list.

Into the left part of the main screen you will see small preview windows of all checked sources. By clicking on some of the small windows, you will see the preview of the respective source into the big screen to the right, as shown in the screenshot below.
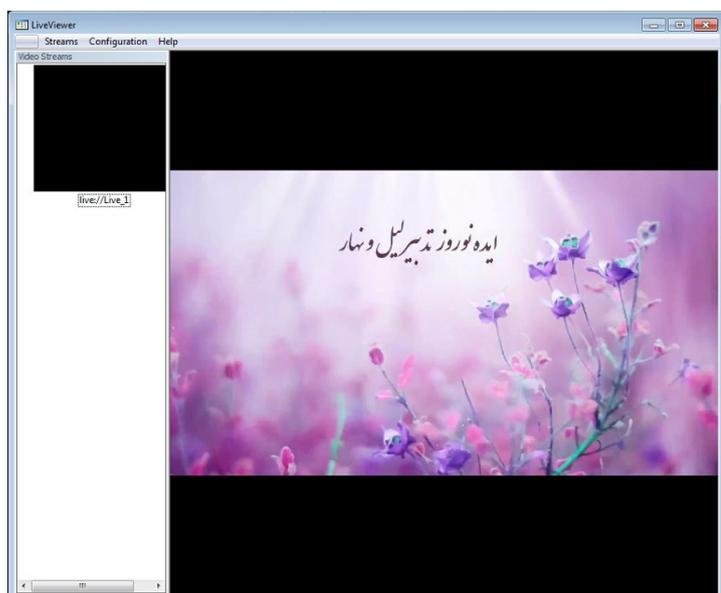
The position of the view-list of video streams could be changed by selecting the desired position from **Streams** menu➔**View orientation**. The **Video Renderer** context menu allows the user to select a video renderer to be used from the list of available presets. Here you can also enable / disable the audio of the configured stream via the **Audio Enabled** command.

Pressing **Configurations** menu ➔**Customize shortcuts** invokes the dialog, shown below:
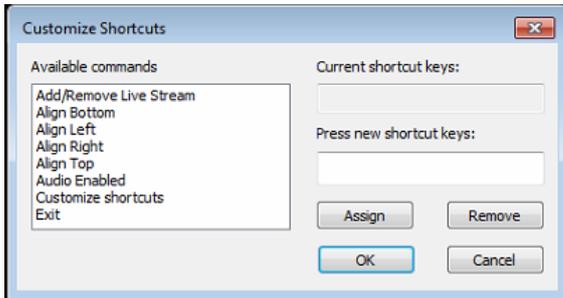
Here you can set a list of user's shortcuts for some main commands, like **Add/Remove streams**; **Alignment**, **Audio Enabling**, etc.

To the left, you will see the list of *Available commands*, and to the right the relevant shortcut will appear in the *Current keys* field. If you want to change the key combination for a certain command, select it from the *Available commands* list, go to the *Press new shortcut key* field, press the desired keyboard combination, and notice that it appears in the respective field. When you are done with the configuration of your shortcut keys press the **Add** button. The new key combination will be assigned to the respective command. To exit the dialog, press **OK**.

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APPENDIX 1 - PlayBox GPI

GPI IN AIRBOX

GPI (General Purpose Interface) is implemented in **AirBox, TitleBox and CaptureBox** as a set of triggers, associated to certain pins on the standard *PC RS-232* Serial Ports (*COM1, COM2*, etc.). In order to function, the *COM* port should be correctly installed in the Windows environment (See Device Manager → Ports).

GPI-IN can be used to slave **AirBox, TitleBox** and **CaptureBox** to triggers from external devices or simple contact switches, 4 triggers per COM port.

GPI-OUT can be used to slave external equipment to events taking place in **AirBox** or **TitleBox**, 2 triggers per COM port.

GPI PINOUT

Each *COM* port accommodates 4 **GPI-IN** pairs and 2 **GPI-OUT** pairs, but not at the same time. A particular *COM* port can be assigned as either **IN, OUT** or **Unused**.

GPI-IN pairs are located at output pins *DTR&RTS* and input pins *DSR, CTS, RI, CD*. You can use any of the output pins for supplying voltage to the GPI circuit.

GPI-OUT pairs are located at output pins *DTR&RTS*, the first GPI trigger generates a pulse on *DTR*, and the second *GPI* trigger generates a pulse on *RTS*.

GPI-IN IMPLEMENTATION

The simplest triggering device would be a pair of wires running from the *COM* port *GPI* pair, soldered to a momentary contact switch. This switch can be either **Push Button Normally Open** (PBNO) or **Push Button Normally Closed** (PBNC). The trigger type is configured in *AirBox GPI Settings Panel* as **High** or **Low** pulse. Many external devices like switchers or mixers have dedicated *GPI* connectors or screw terminals with a description of what *GPI* trigger type (low or high pulse) was implemented. Depending on the trigger setup, a trigger can be a temporary closing or opening of the *GPI* circuit. High pulse means the *GPI* trigger is activated when the circuit is temporary closed. Low pulse means the *GPI* trigger is activated when the circuit is temporary opened.

According to the number of installed *COM* ports, **AirBox** supports up to 32 **GPI-IN** triggers (up to 8 *COM* ports with 4 **GPI-IN** triggers per port).

GPI-OUT IMPLEMENTATION

In order to control external devices by *GPI*, a simple 12V contact relay should be used. It should be connected to the corresponding *COM* port pin pair (4-6 or 7-8) and it should close or open the *GPI* circuit of the external device. Depending on the **AirBox** setup, the *GPI* trigger will generate a pulse (low or high, user-defined) to the corresponding output pin for a short user-defined period (pulse duration).

According to the number of installed *COM* ports, **AirBox** supports up to 16 **GPI-OUT** triggers (up to 8 *COM* ports with 2 **GPI-OUT** triggers per port).

AIRBOX AS A GPI SLAVE

A wide variety of **AirBox** actions can be associated to a *GPI* trigger:

- o   Start playback

- o   Pause/Resume playback

- o   Stop playback

- o   Jump to next clip

- Jump to specific clip (predefined playlist index)
- Jump to specific location in the clip/playlist (predefined timecode)
- Playlist reset (during stop mode only)
- Hardware reset (terminates the playback!)
- Turn logo on
- Turn logo off
- Cue the selected clip
- Cue to specific clip
- Jump to bookmark in time range
- Jump to bookmark name

AIRBOX AS A GPI MASTER

AirBox can activate a *GPI* trigger though specially designated GPI Output event. Please check the following page for GPI Output reference.

AIRBOX GPI SETTINGS PANEL

All **GPI-IN** triggers can be assigned to a specific *AirBox* action. From *AirBox Settings* ➔ *Modules⇨Remote Control*, select "GPI Input" **enabled**, to allow the **GPI-IN** trigger. Press the **Configure** button, to invoke a table for setting the *COM* ports, GPI groups and the available actions for them.

All **GPI-OUT** triggers can be activated by specific *AirBox* event: From *Settings* ➔ *Modules⇨Remote Control*, select "GPI Output" **enabled**, to allow the **GPI OUT** trigger. After that you can Add/Insert GPI Output event in the playlist, by right mouse clicking.

RS232 9-PIN D-SUB PINOUT REFERENCE

Pin	Name	Description	Direction
1	CD	Carrier Detect	In
2	RXD	Receive Data	In
3	TXD	Transmit Data	Out
4	DTR	Data Terminal Ready	Out
5	GND	System Ground	-
6	DSR	Data Set Ready	In
7	RTS	Request to Send	Out
8	CTS	Clear to Send	In
9	RI	Ring Indicator	In

GPI INPUT REFERENCE

(Triggers that control **AirBox, TitleBox**, and **CaptureBox**)

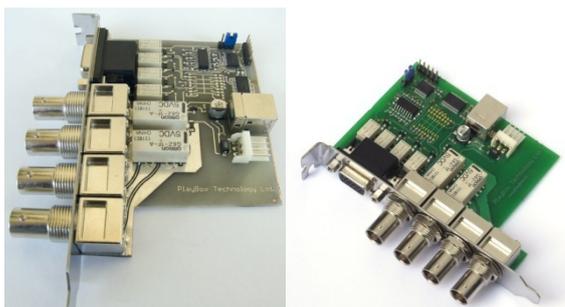| GPI Input	Name	Contact Pins
GPI 1	CST	8 + 4
GPI 2	DSR	6 + 4
GPI 3	RI	9 + 4
GPI 4	CD	1 + 4

GPI OUTPUT REFERENCE

(Pulses sent out from **AirBox** and **TitleBox**)

| GPI Output	Name	Contact Pins
GPI 1	DTR	4 + 5
GPI 2	RTS	7 + 5

APPENDIX 2 – PlayBox GPI board and Bypass Relay board

The PlayBox GPI Relay board has **4 GPI Inputs, 4 GPI Outputs with Relays, 1 Bypass relay (up to 2.6GHz)**

The following table is showing the pinout of the 15pin connector

Pin No	Signal Name	Remarks
1	NC	Not Connected
2	GPI OUT 3	Contact pin 2-7
3	GPI OUT 2	Contact pin 3-8
4	GPI OUT 1	Contact pin 4-9
5	GPI OUT 0	Contact pin 5-10
6	GND	Common Ground
7	GPI OUT 3	Contact pin 2-7
8	GPI OUT 2	Contact pin 3-8
9	GPI OUT 1	Contact pin 4-9
10	GPI OUT 0	Contact pin 5-10
11	+5V	5V DC From the board
12	GPI IN 0	Active - Short to +5V
13	GPI IN 1	Active - Short to +5V
14	GPI IN 2	Active - Short to +5V
15	GPI IN 3	Active - Short to +5V
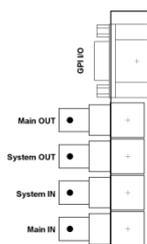
Main IN is the signal which is coming from outside the system

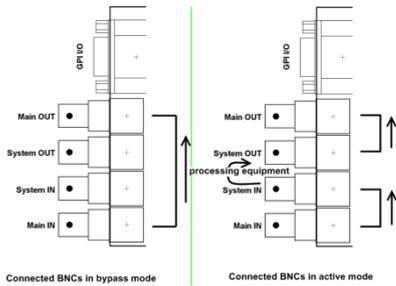**Main OUT** is the signal which is going outside the system

System IN is the Bypassed system input

System OUT is the Bypassed system Output

All GPI inputs are using optocouplers.

All GPI outputs are relays. Both side of the contact are available on the 15pin connector.

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Connected BNCs in bypass mode   Connected BNCs in active mode

Technical Specification

Board size: 100x90mm

Bypass Relay:

-Tested Resolutions: PAL, NTSC, 720p50/60, 1080i50/60/59.94

-Contact switch time: 10ms

GPI Output:

-Maximum switching current: 0.7A

-Maximum switching Voltage: 220V AC

-Maximum switching capacity: 40W

-Minimum switching voltage: 250uV

-Resistive load: min 100 000 operations

-Contact switch time: 10ms

GPI Input:

-Maximum voltage to the input: 12V

Board Power:

-Using Floppy type connector from the machine

-Board Maximum Current: without using the +5V VCC on the connector 300mA

Board control: Thru USB (using internal connector is highly recommended)

APPENDIX 3 – Closed Captions in PlayBox Modules

The text below concerns the management of 608 and 708 CC files, as well as the operation of the DMT 608/708 Decoder.

First, when you work with Closed Captions, you need to keep in mind the following issues:

- Most existing files, as well as all files that are captured with **CaptureBox** have only 608 CC, meaning that they need to be transcoded to 708 CC in some way.
- Files that only have 708 CC will not produce 608. Transcoding from 708 CC to 608 CC is usually impossible. Thus, one can rarely find files that only have 708 CC but such files will not contain 608 CC. Files need to have BOTH 608 and 708 CC, meaning that probably ALL of the incoming content is going to have 608 CC. So, having a 608 to 708 CC transcoder and ingesting 608 CC only will be transparent to the files and it will make no difference if the file is kept in its original 708 CC format, or if it is transcoded.
- In case the original 708 CC is lost and only the transcoded 608 CC version is kept, the lost data will probably contain only bells and whistles, which could exist in 708 (in the form of fancier fonts), but the content of the CC file in terms of text, position of lines, colors, and so on, will be the same.

Afterwards, the following technical aspects need to be taken under consideration:

- Full CC Ingestion (608 and 708) from the original source – via SD-SDI or HD-SDI streaming
- Support of DVD, ATSC and SCTE-20/21 CCs in MPEG files (PS, SPTS, MPTS).
  Note: Only ATSC supports 708 CC
- Support of DVD, ATSC, SCTE-20/21 in H.264 files (via MainConcept©)
  Note: MainConcept© has a lot of bugs and many of the files may present errors in the abovementioned formats
- Support of DVD, ATSC, SCTE-20/21 in live streams (MPEG by DMT, H.264 by MainConcept© – same as above)
- Support of 708 CC in live digital inputs (SD-SDI, HD-SDI) - SMPTE-334-2
- All of the above will lead to a pass-through of the available CCs. Sources that only contain 608 CC, will also be transcoded to 708 CC.

APPENDIX 4 – CAPTUREBOX KEYBOARD SHORTCUTS

Function	Shortcut
Setup	Alt+T
Compensation	Alt+N
In field	Alt+I
Out field	Alt+O
Duration field	Alt+D
File Name field	Alt+F
Add to List	Alt+L
Sync	Alt+Y
Sort	Alt+S
Capture	Alt+R
Edit	Alt+E
Finish	Alt+F
Auto Capture	Alt+U
Manual Capture	Alt+M

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RS-422 Controller

Deactivation	Ins
Play	Up arrow
Still	Down arrow
Stop	Spacebar
FF	Right arrow
REW	Left arrow
Seek FF	Hold right arrow
Seek REW	Hold left arrow
Frame Advance	Ctrl+ right arrow
Frame Reverse	Ctrl+ left arrow

APPENDIX 5 – CLIP TRIMMER KEYBOARD SHORTCUTS

Function	Shortcut
PLAY / PAUSE / RESUME	Space
Play Selection	Shift + Space
Close Trimmer	Esc
Mark In	I
Mark Out	O
Get Scene / Annotation	Ctrl+S
Export Frame as file	Ctrl+E
Add Zone	Ctrl+Z
Add Marker in Zone	Ctrl+M
Split	R
Reset	Ctrl+BkSp
Delete clip section	Ctrl+D
Lock/Unlock In point	Ctrl+Alt+I
Lock/Unlock Out point	Ctrl+Alt+O
Lock/Unlock Duration	Ctrl+Alt+U

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Go to In Point	Ctrl+I
Go to Previous Mark Point	Ctrl+Left
Go to Out Point	Ctrl+O
Go to Next Mark Point	Ctrl+Right
Go to Beginning	Home
Go to End	End
Go to Next Zone	Ctrl+Alt+Right
Go to Previous Zone	Ctrl+Alt+Left
Select Next Clip section	Alt+Right
Select Previous Clip section	Alt+Left
Go 1 frame earlier	Left
Go 1 second earlier	Shift+Left / Up
Go 10 seconds earlier	PageUp
Go 1 frame later	Right
Go 1 second later	Shift+Right / Down
Go 10 seconds later	PageDn
Goto	Type numbers and press Enter

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