VJ-PRO CONSOLE

AXEL VISUAL RADIO

(Rev. 2.1 Eng)

1. INTRODUCTION

1.1 AXEL TECHNOLOGY VISUAL RADIO

VJPRO CONSOLE is the **VISUAL RADIO** main interface. The software receives all the information on the playlist from the Radio Automation software (e.g.: Axel Technology's **DjPro**) and manages all the hardware and software useful for the Visual Radio, according to the user's choices. All these choices define the whole system configuration.

1.2 HIGHLIGHTS

The hardware devices and the software modules are the Visual Radio sources. They are divided into different fields/areas. Every area is related to a particular aspect of the system. In each Layout you have all the Rules for the source behaviour. Here below the list of the sections and sources managed by VjPro Console:

- **MASTERS**   Radio automations / sources which manage Vj-Pro console
- **PLAYERS**   Media players which play the videoclips
- **GRAPHICS**   The system which manages the overlayed graphics
- **VIDEO SWITCHER** Device which controls the video switching of the sources
- **VIDEO SOURCES**   Live Video sources managed by the video switcher
- **EVENTS**   Playlist items: songs, jingles, advertising, news.
- **EXCEPTIONS**   Emergency workflows to manage unattended events

The **RULES** that manage the **SOURCES** are set on a general Settings panel which allows to save them with a name. It is possible to save several groups of rules, regroup them on 8 elements groups, link them to **LAYOUTS** and assign them to shortcut keys both on user interface and **DEDICATED KEYBOARD**.

1.3   EVENTS MANAGED BY VJPRO CONSOLE

During a radio scheduling we have a list of EVENTS which compose the playlist. As VjPro will follow the radio playlist, it is necessary to link a video media file to each event, in order to have always something playing on tv.

VjPro console allows to manage the following EVENTS:

- SONGS
- LIVE (live speakers)
- JINGLES (station ID)
- NEWS
- WEATHER (Weather forecasts)
- TIME SIGNAL
- ADVS (Advertising)

Some behaviours are fixed, but some other can be customized in order to fit to the editorial choices of the Radio Station.

SONGS

Every song must be linked to a video clip (see next paragraph).

If there is not a video clip linked to a song, it is possible to decide what should happen among:

- The system will play the audio using the audio file of the radio station, showing random clips chosen from a specific folder
- The system will play the audio using the audio file of the radio station on a fixed video clip
- The system will play the audio using the audio file of the radio station and the video from a source chosen among the ones available on video switcher (e.g.: a camera)

LIVE

When the speaker is speaking, the system will show video from live cameras on studio. The connection between microphone and camera, and the passages among all the cameras, can be set and customized on the cameras settings panel.

JINGLES

As station IDs (jingles) are as important as graphics to give identity to the station, it is very important to associate a video clip to each jingle (using XTrimmer).

NEWS/WEATHER FORECASTS

Every station manages the news in a different way.

At the moment it is possible to manage them in four different ways (also in non-exclusive way):

_ Live News read by the speaker, managed as a regular **LIVE** event. It is also possible to play alternative contributes.

_ News coming from agencies as audio file: it is possible to have an automatic procedure of audio/video muxing wich will create a complete newscast at given times.

_ News coming from agencies as audio file: The VjPro console will play a video clip previously set, using the audio file of the Radio.

_ News coming from agencies as video file: a procedure is provided to extract audio from video which allows to schedule an audio event which will be automatically associated to video.

TIME SIGNAL

Even for time signal it is possible to choose between two options, but it is necessary to choose which one to use for every situation:

_ Live time signal read by the speaker, managed as a regular **LIVE** event.

_ Time signal recorded as audio file to be associated to a dedicated video file, also with a dedicated graphic page, with a clock.

ADVERTISEMENT

The advertisement can be managed in three different ways, the choice of which way to use depends on the turnover and the number of advertisers of the station. However it is possibile to start with the simplest way and change it later if the turnover gets bigger.

- *Same Advertisement as the radio*
    It is necessary to link a video to each audio advertisement with the same length (it can also be a graphic clip).
    This way will follow exactly breaks and lengths of the radio station.

- *Advertisement independent from radio*

In this case, it is necessary to set an independent advertising area using Axel Technology's RAM-COMM advertising scheduler which allows to manage both commercials and fillers in order to keep the same length on the clusters of all areas (radio and TV).

Even in this case the two playlists (radio and TV) will be perfectly synchronized, even if they play different contents.

- *No advertisement on TV*

In this case, the TV will play clips selected from a specific folder or audio category when an advertising cluster is playing on radio.

This can be useful during the startup period of the TV when there are not advertisers (or just a few advertisers) for the new station.

## 1.4 LINKING AND MARKING CLIPS

The "secret" of speed and fluency of AXEL VISUAL RADIO in following the radio playlist is the marking of all clips (songs, jingles and so on). Doing it with DjPro is very easy:

- Access the song database, or any other audio category, and open the editing mask of an audio
- Select the tab called *User Data*, and in the *Clip* field use the browse tool to select the video file to be linked to the song. We suggest to save the video files on server and group them by folders according to their type, such as songs, jingles, adverts and so on.
- Once you selected the video clip, click on the ▶ button which will open Axel Technology's **XTrimmer** to mark it (that is setting start and end point, intro and outro point).

Every time that an audio will be played on Radio, the linked video clip will be played on TV, using the related markers.

2. USER INTERFACE

2.1 MAIN SCREEN
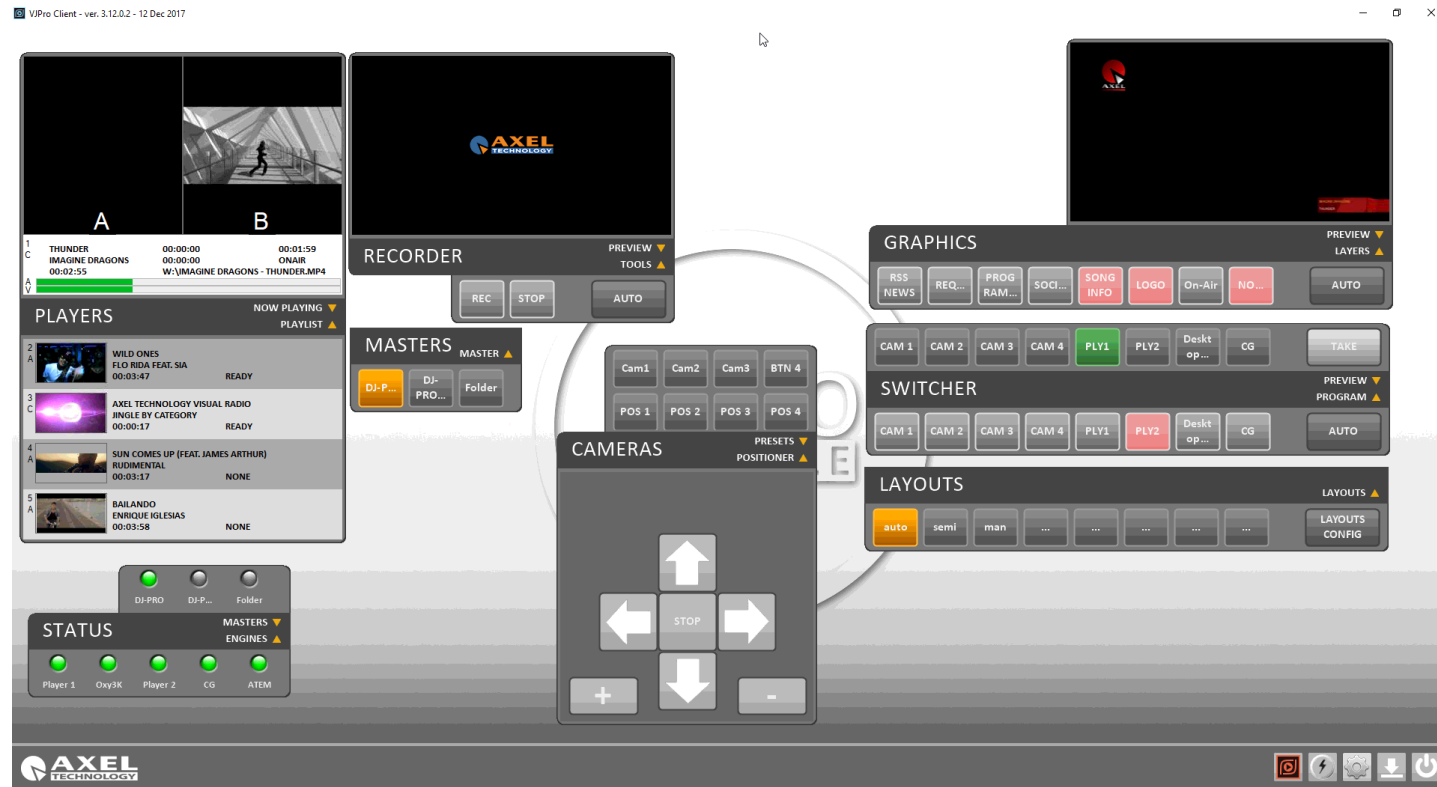
the VjPro user interface with all the main "widgets" expanded

The software is composed by a user interface (GUI) with multiple windows (we will call them **WIDGETS**) which can be moved, expanded or (some of them) resized in order to customize the view. It is possibile to save 8 compositions maximum, and recall them by clicking on the related buttons.
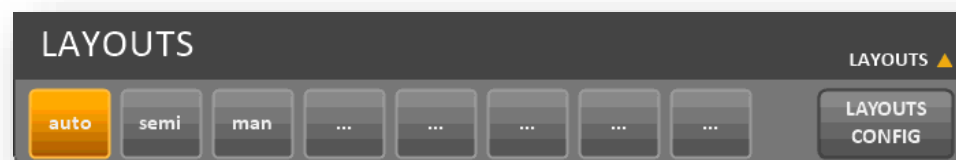
Buttons for layout selection

On the bottom left, clicking on **AXEL TECHNOLOGY** logo, it will open the info window about the software, while on the right there are five buttons which allow you to restart the engines, reset the system cache, open **SYSTEM CONFIGURATION**, minimize the window or close the GUI.

Axel logo shows info about the software

Buttons on the right

2.2 BUTTONS, ICONS AND GENERAL TASKS ON GUI

Vj-Pro GUI was created to be easy to use. Here a list of all the buttons you can find on its panel:

	IMPORT	Allows to import a previously saved setup file.
	REMOVE	Allows to delete the selected Layout
	SAVE	Saves the current configuration
	COPY	Keeps on memory the values of the current element
	PASTE	Assign to the current element the values previously saved with COPY
	MOVE BEFORE	Move the selected element back of one step on a list Useful to organize a list of objects
	MOVE AFTER	Move the selected element forward of one step on a list Useful to organize a list of objects

	SELECT	Allows to browse an element
	ADD	Add a new element on a list
	DELETE	Delete and element from a list
	EDIT	Modify an element or its parameters

2.3 WIDGETS

The basic **WIDGETS** available at the moment are seven:

- **LAYOUTS**, intended to manage **SITUATIONS**
- **SWITCHER**, dedicated to the **VIDEO MIXER** comands
- **MASTERS**, for choosing which automation is commanding the Visual Radio
- **PLAYERS**, to show information about playing clips
- **GRAPHICS**, to manage superimposed graphics
- **CAMERAS**, to manage IP cameras
- **STATUS**, to view the status of all the system components
- **RECORDER**, to record what is currently playing

The module-based structure of the software allows to add other widgets in the future, if needed.

RESIZE HANDLE

ABOVE AREA

MAIN BAR

TITLE

BUTTONS

BELOW AREA

DISPLAY ABOVE AREA

DISPLAY BELOW AREA

ACTION BUTTON

Structure and elements of a "widget"

The **WIDGETS** have a constant aspect and behaviour. They are composed by a central bar with its name, and two little arrow buttons wich allow to expand or close the two **operative areas**, one above and one below the main bar.

Usually the **below operative area** is the main area, while the **above operative area** has usually a secondary role or is just for visualization.

The areas could have **selection buttons** and **action buttons**, indicators or other contents, such as video preview or graphics. The arrows direction shows the status. A double click on the central bar alternates between the current view and the closure of the two areas leaving only the main bar visible.

2.4 LAYOUTS

This is probably the most important module, as it allows to easily manage the behaviour of the whole system.

Layouts widget

The operative area allows to select the current **LAYOUT**.

These eight buttons are the same as the eight keys of the upper line on the **DEDICATED KEYBOARD**.

We suggest to set these Layouts as choices which can be quickly selected, for example during the same program, so it is possible to change the system behaviour according to the current needs. It is possible to select among eight **LAYOUTS** connected to eight different situations. The button linked to the selected **LAYOUT** is light up in yellow.

Choosing the **[LAYOUTS CONFIG]** button it is possible to create, duplicate and modify the eight **LAYOUTS**.

2.5 VIDEO SWITCHER

Video Switcher widget

This panel shows the **VIDEO SWITCHER** status and allows to manage it manually.

The lower operative area allows to manage the on air video source. The eight buttons are associated to the first eight inputs of the **VIDEO SWITCHER** and show the shorten name which can be set on the **SYSTEM CONFIGURATION** panel.

Usually, when in automatic mode, these buttons can't be enabled but, by turning into red colour, they show which video input is currently on air.

The **[AUTO/MANUAL]** button on the right allows to switch from automatic to manual mode, so the system will not automatically switch the video sources, but it will wait for the operator to do it. On this situation, the buttons are enabled and allow to choose the video source to go on air.

The above area of the **WIDGET** contains eight more buttons connected to the same input of the **VIDEO SWITCHER**. When in MANUAL mode, those buttons which turn into green allow to select the preview video before it goes on air. The **[TAKE]** button makes this switching, as set on the switcher control panel of the current **LAYOUT**. These eight buttons are the same as the eight keys of the lower line on the **DEDICATED KEYBOARD**.

2.6 PLAYERS

The **WIDGET** dedicated to players is atypical because it has just a consultative purpose, as it does not allow to act on the clips that are completely managed by Vj-Pro Console engine.

On the below operative area it shows a list of clips which is the video playlist provided by the radio automation, it shows the main information such as artist and title, the length and, if necessary, an explicative icon in case of problems.

It also shows a little preview image (thumbnail). Every item is shown with a background colour which identifies the player which will play it (A or B), this informartion is also shown on the top left of each line.

On the above operative area, it shows the realtime preview of the clip currently playing, with some additional information: title, artist, current position expressed in time, Mark In and Mark Out points, remaining time and full name of the related file.
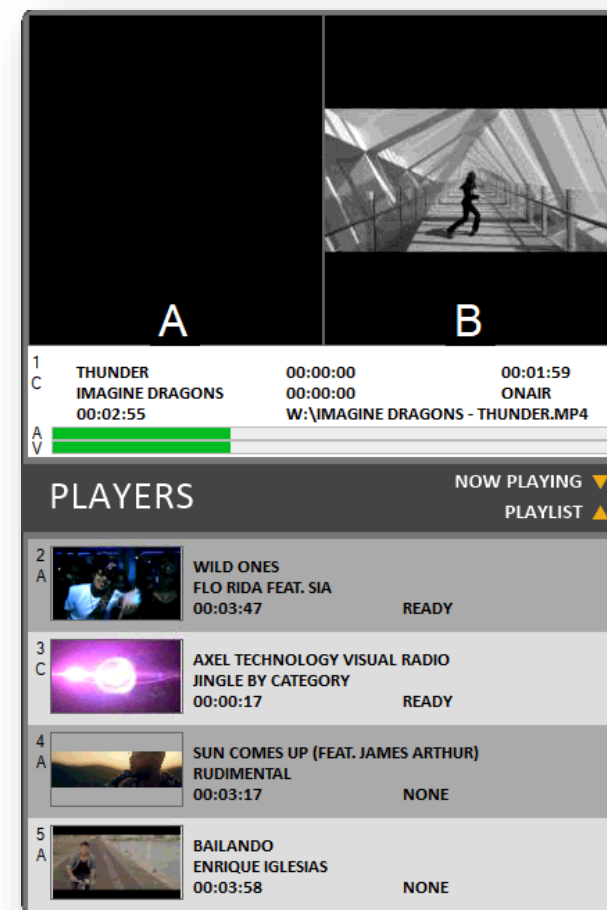
Video players widget

2.7 GRAPHICS

The widget dedicated to graphics

This window shows the graphical contributions and let you manage them manually.

The software allows you to overlay up to eight independent graphics layers, associated to the eight buttons in the lower operating area of the **WIDGET**, and the eight physical buttons in the second row from the top on the **DEDICATED KEYBOARD**

Graphic layers can be active simultaneously, in every possible combination, with two cautions: the overlay order and the position of the graphic elements into each layer, that must be carefully studied during design to avoid involuntary overlapping between different layers.

Available contributions are defined in the section dedicated to **GRAPHICS**.

When operating in automatic mode, such layers are sent on the basis of the **SETTINGS** defined during the configuration, the buttons of the graphics currently on the air are red-coloured. Combinations can vary in real time depending on the type of **EVENT**.

For more information, see **APPENDIX C: SOME HINTS FOR GRAPHICS**.

The **[AUTO/MANUAL]** button on the right allows you to switch between automatic and manual mode. When in manual mode, the system is not responsible for managing the graphical layers, since this task is left to the user. In this situation the buttons become operational and allow you to directly choose the graphic pages to be executed on the air.

In the top area of the WIDGET, an overall graphical construction preview is displayed, with all the graphical layers actually on air.
These eight buttons are equivalent to the second line from the top on the DEDICATED KEYBOARD.

2.8 CAMERAS

Camera controller

This **WIDGET** provides a remote control for the IP cameras that are connected to Visual Radio system, it can control up to four different cameras, each one can save four preset positions and recall them by the POS buttons on the top area, while the bottom area provides the tools for moving and zooming in/out the selected camera.

The list of compatible models of IP cameras is present in the Video Sources section of the System Configuration (see next chapter)

2.9 STATUS

This **WIDGET** allows to monitor the situation of the entire system, providing the status of all its elements.

Status widget

The bottom area shows the status of **RESOURCES** controlled by **VJ-PRO CONSOLE**, and in particular the players, the graphics engine, the **VIDEO SWITCHER** and the cameras.

ENGINE	Green LED	Red Led	Yellow Led
Players	OK	Problems with player	Player not active
Graphics	OK	Problems with graphics	Graphics engine not managed – Managing graphics
Switcher	OK	Problems with video switcher	Switcher not managed – Switcher in manual mode
GPI/Os	OK	Problems with GPI/O	GPI/O not managed

The top area reports the status of radio automation resources that control VJPro Console

ENGINE	Green LED	Red Led	Yellow Led
Masters	Master active	Problems with master	Master not active, waiting

2.10   RECORDER
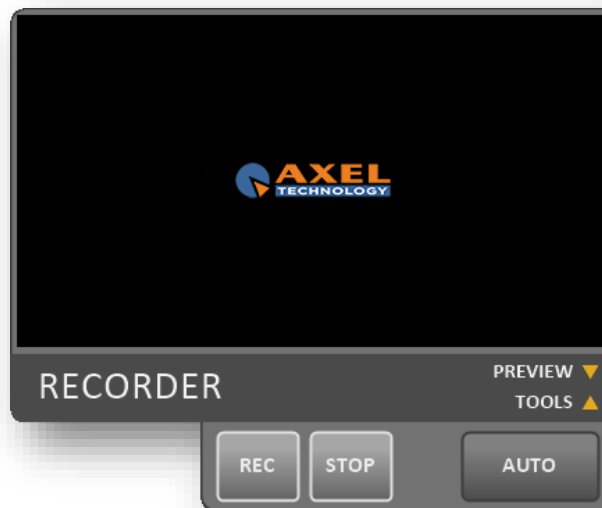
Recorder

The RECORDER **WIDGET** allows you to capture the video feed ingested by the input set, the captured video files will be automatically saved in a dedicated folder. All the parameters related to this tool can be set in the System Configuration panel.
The top part displays a preview of the video feed.
When the Recorder is set in MANUAL mode, you can start/stop the recording by using the related buttons in the bottom part. When it is in AUTOMATIC mode, the Recorder can receive start/stop commands from the radio automation.

3. SYSTEM CONFIGURATION

The basic settings of **VJ-PRO CONSOLE** are gathered in the **SYSTEM CONFIGURATION** panel that can be recalled by the button representing a gear, at the bottom right of the software interface.
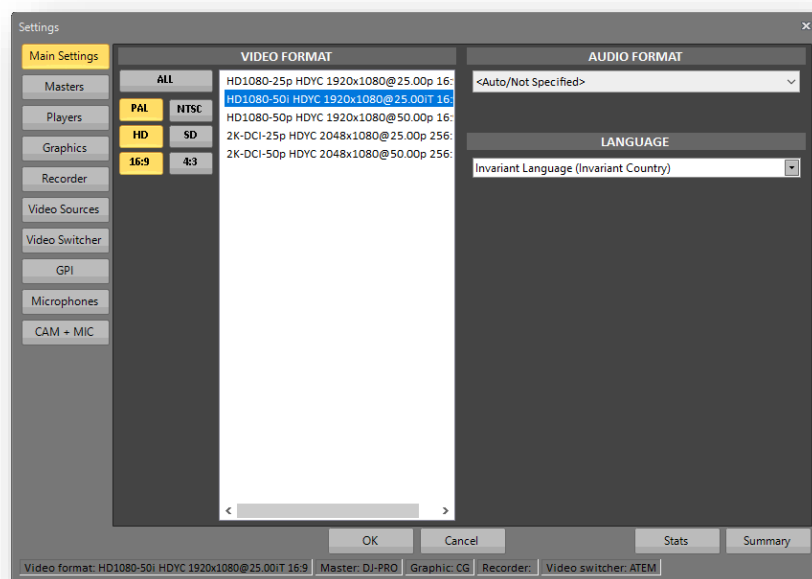
The System Configuration panel

On the left of this window we find a menu with ten buttons, each dedicated to a system **ENVIRONMENT**: the **MAIN SETTINGS**, the radio automation (**MASTERS**), the multimedia players (**PLAYERS**), **GRAPHICS**, **RECORDER**, the **VIDEO SOURCES**, the **VIDEO SWITCHER**, the management of external signal (**GPI**), the available **MICROPHONES** and the relation between cameras and microphones (**CAM + MIC**).

Below, a status bar briefly summarizes the system's current assignments, related to the main parameters.

The **[OK]** button allows you to return to the main interface saving **ALL** the changes made in this session. By choosing **[Cancel]** you will return to the main interface of the software losing all the changes.

3.1   MAIN SETTINGS
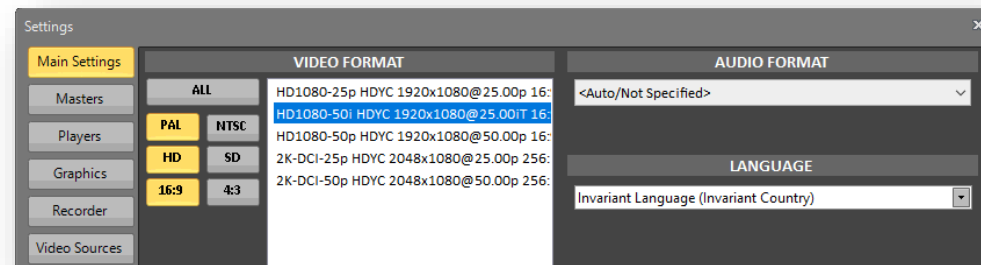
The System Configuration panel - Main Settings

In this first panel we can set the system's **VIDEO STANDARD**. These parameters will automatically update on multimedia players, the graphics engine, and, whenever possible, the video mixer. Some models of video switchers, cameras and external devices will need to be configured appropriately independently. It is essential to use the same video format in all the devices belonging to the Visual Radio system. A frequently used choice is Full-HD format (1920x1080).

The procedure for selecting the video format is very simple, you just have to make three basic choices:The TV system: [PAL] or [NTSC]

- The resolution: Standard Definition [SD] or High Definition [HD]
- In case you choose SD you can select [4:3] or [16:9]
- In case you choose HD you can select [1080] or [720] pixels of vertical resolution

According to your choices, the box on the right will show **only the compatible formats**, allowing you to define the required format in the easiest and fastest way.

If the desired format is not among those selectable with this simplified procedure, simply select [ALL] to get a list of all the formats supported by the system.
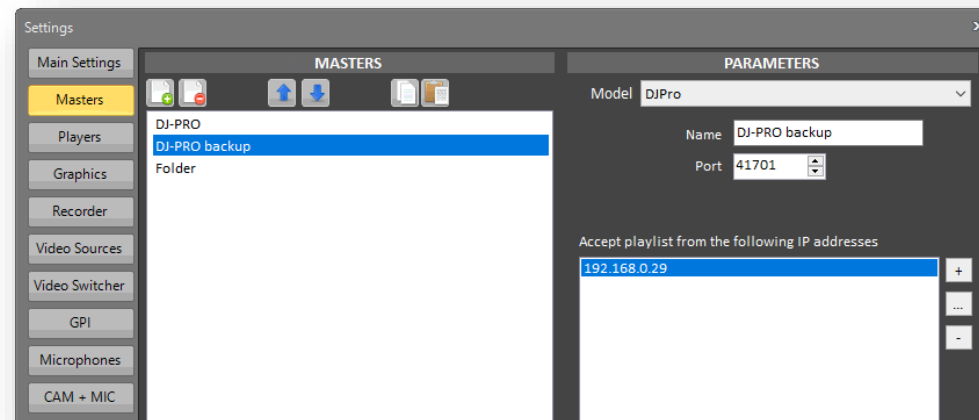
AUDIO FORMAT

if you have special requirements for the audio format, you can select a specific one from the drop down menu, otherwise leave the "Auto/Not Specified" option selected to let the system choose the default audio format.

LANGUAGE

In this panel it is possible to select from the drop down menu the language of the software's graphic interface.

3.2 MASTERS

The System Configuration panel - Masters

From this panel we can manage all the possible **MASTERS** of the system, that is the automation softwares that can command the Visual Radio. The system can also act as a normal video player and automatically get the video clips from one or more paths: this last situation is useful especially in emergency cases.

The list of available masters is on the left box. Above this box some buttons allow, from left to right, to **[ADD]** a new item, to **[REMOVE]** the currently selected item, to move **[UP]** or **[DOWN]** the selected item into the list, to **[COPY]** and **[PASTE]** the parameters of the selected item, that are shown on the right in the PARAMETERS section.

The same functionalities are repeated, with the same behavior, also for all the other panels that we can find in the configuration window, so we will analyze in detail only the procedure related to this area.

By pressing the [image] **[ADD]** button a new item will be inserted in the MASTERS list, allowing you to define all the properties of the new **RESOURCES** in the PARAMETERS section. A drop down menu proposes a list of different kind of masters. This is a dynamic list which, according to the support on third-party solutions, can be populated, in the future, with new entries.

Currently, only Axel Technology's DJPro Classic and DJPro Enteprise are the only available radio automation softwares in this menu, but in the future some other voices related to other radio automation systems may appear.
The list of properties that we find below depends on the type of resource selected above:

- For *DjPro* you must indicate an identifying name, associate the communication port that will be used by the radio playout and set a list of all the IP addresses allowed to send commands to the Visual Radio (whitelist).
- For "From folder" you must indicate an identifying name, a selection mode (sequential or random) and the list of folders where the system will select the clips from. By inserting more than one folder, the system will generate a simple playlist according to the selected folders.
- For "From file" you must indicate an identifying name, the path and name of the configuration file containing a special playlist.

The [image] **[REMOVE]** button allows you to delete the selected resource from the list.

To edit a resource, just select it from the list and modify the parameters appearing on the right.

The two blue arrows, [image] [image] **[MOVE BEFORE]** and **[MOVE AFTER]**, are used to change the order of the resources into the list, while the [image] **[COPY]** and **[PASTE]** buttons are used to replicate data bewtween two resources, allowing you to populate the list very quickly.

3.3 PLAYERS
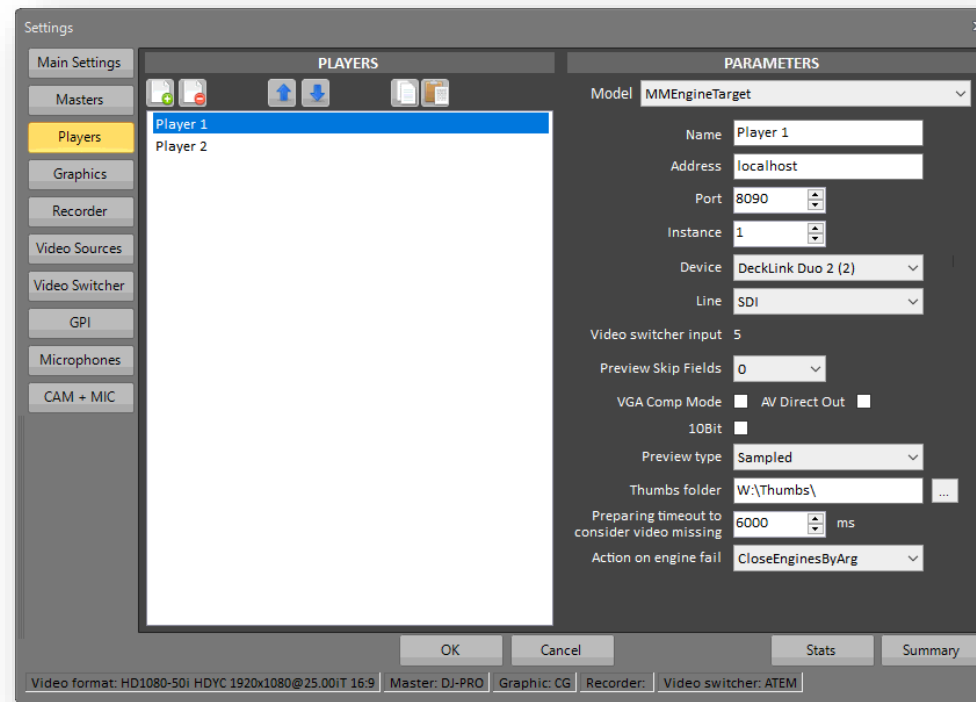
The System Configuration panel - Players

In this panel you can manage all the **MULTIMEDIA PLAYERS** used by the system.

The list of available Players is on the left box. By selecting a resource from the list, the related parameters appear on the right. The *Model* drop-down menu shows a list of the available player types. This is a dynamic list which, according to the support on third-party solutions, can be populated, in the future, with new entries.

By pressing the **[ADD]** button, you can insert a new **RESOURCE** and, according to the player type, set all the related parameters on the right side:

Name   Identifing name

Address   IP address of the PC where you are running the player engine. Usually the engine is on the same PC as VjPro client, so you can set "localhost" as IP address

Port   Communication port (default is 8090)

Instance   Associated to the communication port. Each output must set a different number

Device   Video output device used for the playout. The drop-down menu will show the available ones

Line   When selecting "NDI Renderer" in the *Device* parameter, the Line menu shows the list of available NDI resources

Video switcher input   Value automatically displayed according to the settings in the *Video Switcher* section (see related paragraph)

Preview Skip Fields   Number of frames after which to take a thumbnail (when Preview Type is set on *Sampled*)

AV Direct Out   Leave this parameter to AUTO

VGA Comp Mode   Enable this parameter if you have any issues in seeing the preview when connected to the PC with Remote Control softwares. **WARNING**: the activation of this parameter could affect the system performance

10Bit

Preview type   defines the preview mode in the PLAYERS widget, possible values are *None*, *Realtime* and *Sampled* (default value)

Thumbs folder   Folder where the system will save the thumbnails generated by the Player when in *Sampled* preview mode

Preparing timeout to consider video missing   The Player checks the existence of the clips and considers the video missing if not detected within the value set in this parameter. If the check fails, the system uses the related rule set in the *Exceptions* panel (see LAYOUTS CONFIG capitol)

Action on engine fall   List of emergency actions that the system can take when the player's engine is falling

3.4   GRAPHICS
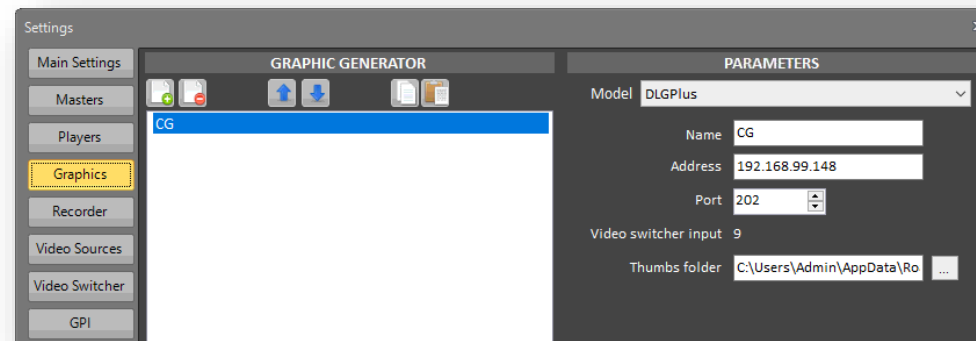
The System Configuration panel - Graphics

From this panel we can manage all the **GRAPHIC ENGINES** that can be used by the system.

The list of available Graphic Generators is on the left box. By selecting a resource from the list, the related parameters appear on the right. The *Model* drop-down menu shows a list of the available types. This is a dynamic list which, according to the support on third-party solutions, can be populated, in the future, with new entries.

By pressing the **[ADD]** button, you can insert a new **RESOURCE** and, according to the Graphic Generator type, set all the related parameters on the right side:

Name	Identifing name
Address	IP address of the PC where you are running the CG engine. Usually the engine is on the same PC as VjPro client, so you can set "localhost" as IP address
Port	Communication port (default is 8090)
Instance	Associated to the communication port. Each output must set a different number

Device   Video output device used for the CG. The drop-down menu will show the available ones

Line   When selecting "NDI Renderer" in the *Device* parameter, the Line menu shows the list of available NDI resources

Video switcher input   Value automatically displayed according to the settings in the *Video Switcher* section (see related paragraph)

Preview type   defines the preview mode in the PLAYERS widget, possible values are *None*, *Realtime* and *Sampled* (default value)

Thumbs folder   Folder where the system will save the thumbnails generated by the Player when in *Sampled* preview mode

Communication with SocialHub   Allows to receive the messages sent by SocialHub. The port number must be the same as the one set in SocialHub settings

3.5 RECORDER

The System Configuration panel - Recorder

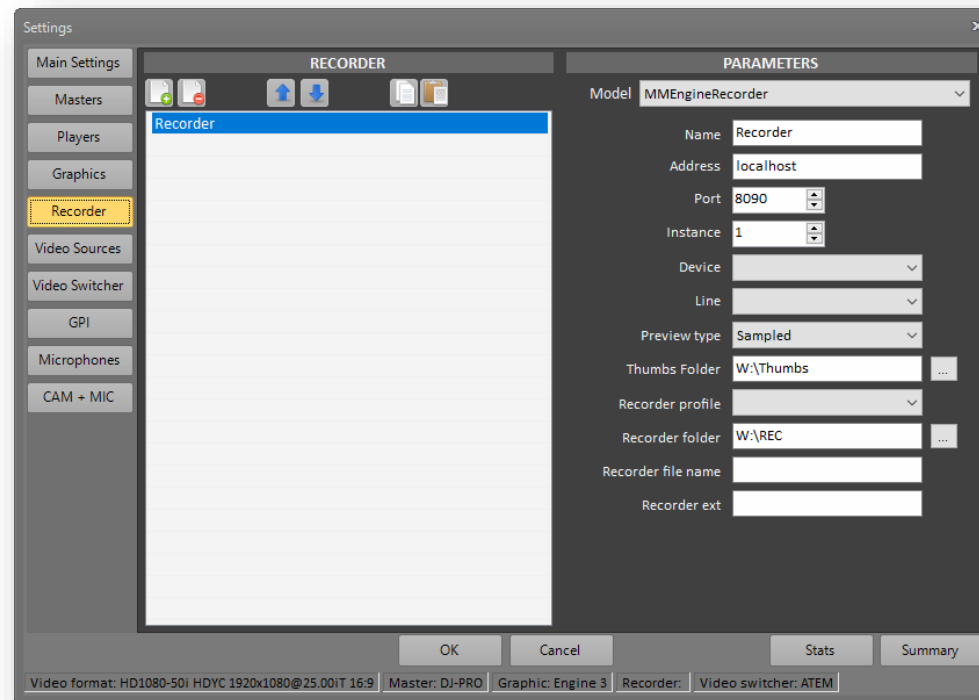In this panel you can manage all the **RECORDERS** used by the system.

The list of available Recorders is on the left box. By selecting a resource from the list, the related parameters appear on the right. The *Model* drop-down menu shows a list of the available player types. This is a dynamic list which, according to the support on third-party solutions, can be populated, in the future, with new entries.

By pressing the **[ADD]** button, you can insert a new **RESOURCE** and, according to the recorder type, set all the related parameters on the right side:

Name   Identifing name

Address   IP address of the PC where you are running the Recorder engine. Usually the engine is on the same PC as VjPro client, so you can set "localhost" as IP address

Port   Communication port (default is 8090)

Instance   Associated to the communication port. Each input must set a different number

Device   Video input device used for the recording. The drop-down menu will show the available ones

Line   When selecting "NDI Renderer" in the *Device* parameter, the Line menu shows the list of available NDI resources

Preview type   defines the preview mode in the RECORDER widget, possible values are *None*, *Realtime* and *Sampled* (default value)

Thumbs folder   Folder where the system will save the thumbnails generated by the Recorder when in *Sampled* preview mode

Recorder profile   Available recording presets

Recorder folder   Folder where the system will save the video recordings

Recorder file name   Default file name for the recorded files. Special strings can be used (e.g.: "Podcast %HH%%mm%%ss%"). If not set, the file name is derived on the recording date/time

Recorder ext   Default extension for the recorded files. If not set, the used extension is .MP4

3.6   VIDEO SOURCES
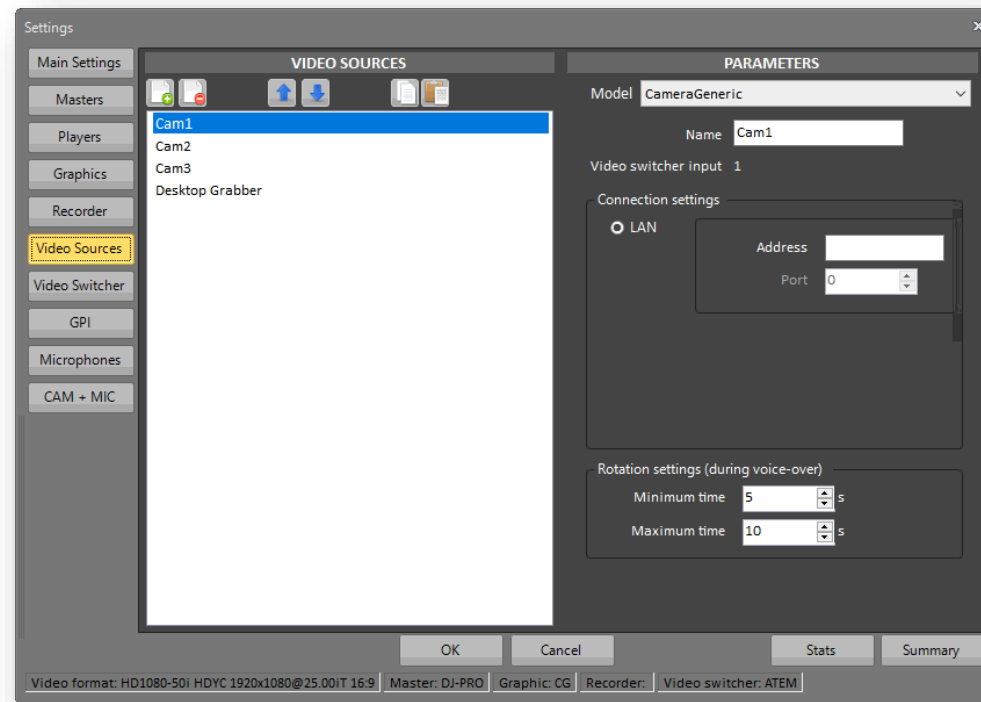
The System Configuration panel - Video Sources

In this panel you can manage all the **VIDEO SOURCES** that can be used by the system.

The list of available Video Sources is on the left box. By selecting a resource from the list, the related parameters appear on the right. The *Model* drop-down menu shows a list of the available source types. This is a dynamic list which, according to the support on third-party solutions, can be populated, in the future, with new entries.

By pressing the **[ADD]** button, you can insert a new **RESOURCE** and, according to the source type, set all the related parameters on the right side:

Name Identifing name

Video switcher input Value automatically displayed according to the settings in the *Video Switcher* section (see related paragraph)

Connection settings If you want to remote a compatible IP camera through the CAMERAS widget, set the IP Address and, if needed, the communication port

Rotation settings (during voice-over) This section allows to establish the switch time range of the camera on the air during its use associated with a microphone, if more than one camera is active at the same time

3.7 VIDEO SWITCHER
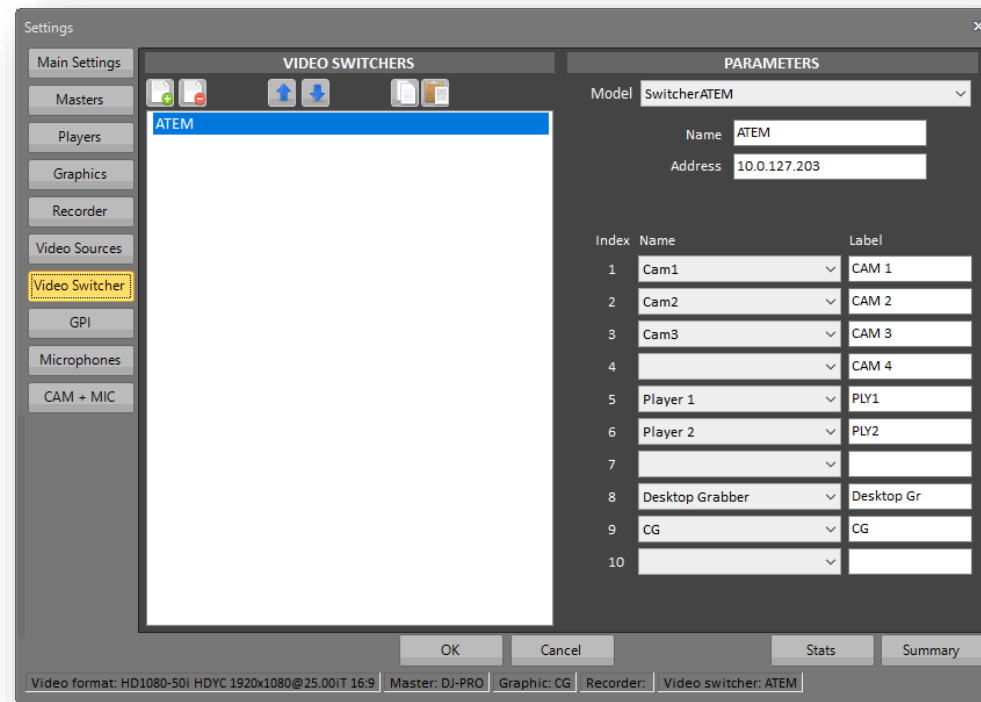
The System Configuration panel - Video switcher

In this panel you find the list of the **VIDEO MIXING CONSOLES** that can be used by the system.

The list of available Video Switchers is on the left box. By selecting a resource from the list, the related parameters appear on the right. The *Model* drop-down menu shows a list of the available source types. This is a dynamic list which, according to the support on third-party solutions, can be populated, in the future, with new entries.

By pressing the **[ADD]** button, you can insert a new **RESOURCE** and, according to the source type, set all the related parameters on the right side:

Name   Identifing name

Address   IP address of the Video Switcher

Table   Each line corresponds to an input of the switcher. You can associate one of the available sources by the related drop-down menu, and a Label that will appear on the related button in the SWITCHER widget

Depending on the selected **VIDEO MIXER** model, there may be considerable differences in the number and type of parameters.

For a list of supported mixers and associated parameters, refer to Appendix **B: VIDEO MIXER**.

3.8 GPI

The System Configuration panel – GPI devices

In this panel you find the list of the **GPI DEVICES** that can be used by the system.
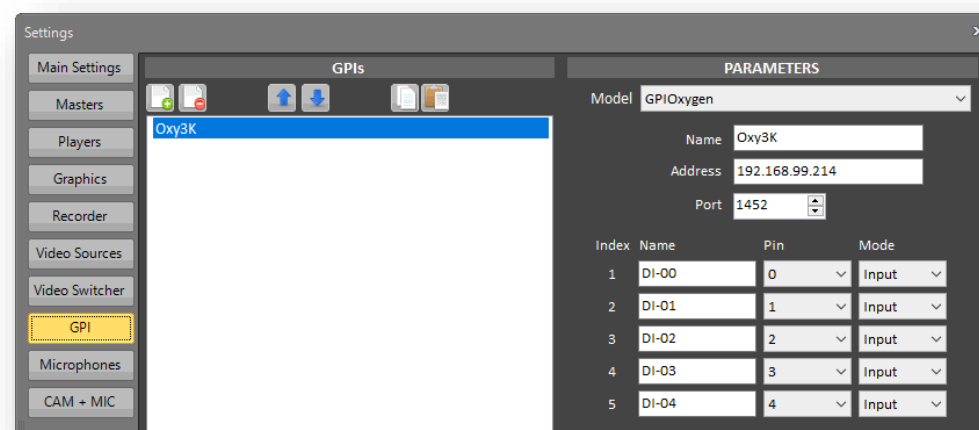
The list of available devices is on the left box. By selecting a resource from the list, the related parameters appear on the right. The *Model* drop-down menu shows a list of the available source types. This is a dynamic list which, according to the support on third-party solutions, can be populated, in the future, with new entries.

By pressing the **[ADD]** button, you can insert a new **RESOURCE** and, according to the source type, set all the related parameters on the right side:

Name   Identifing name

Address   IP address of the GPI device

Port   Communication port of the GPI device

Table   Each line corresponds to an input or output of the GPI device. Do not change these values if not needed

3.9 MICROPHONES
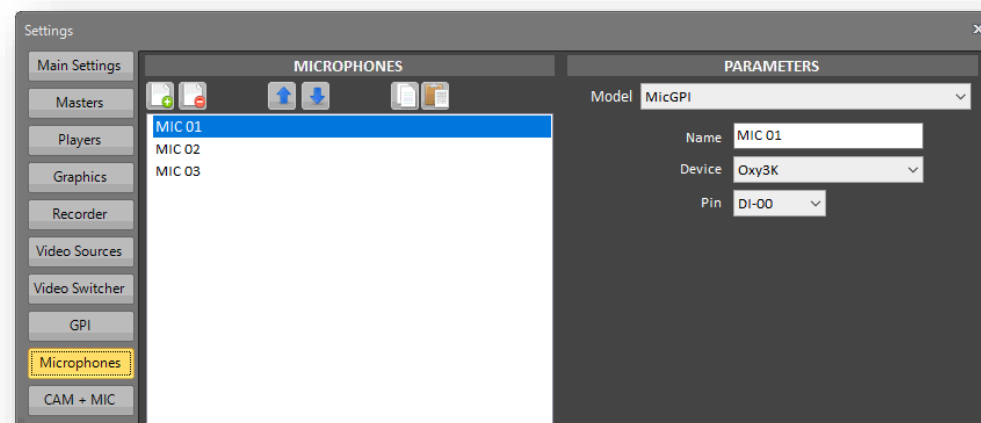
The System Configuration panel – Microphones

In this panel you find the list of the **MICROPHONES** that can be managed by the system.

The list of available microphones is on the left box. By selecting a resource from the list, the related parameters appear on the right. The *Model* drop-down menu shows a list of the available source types. This is a dynamic list which, according to the support on third-party solutions, can be populated, in the future, with new entries.

By pressing the **[ADD]** button, you can insert a new **RESOURCE** and, according to the source type, set all the related parameters on the right side:

Name   Identifing name

Device   GPI device associated to the MIC fader

Pin   GPI input associated to the MIC fader

3.10 CAM + MIC
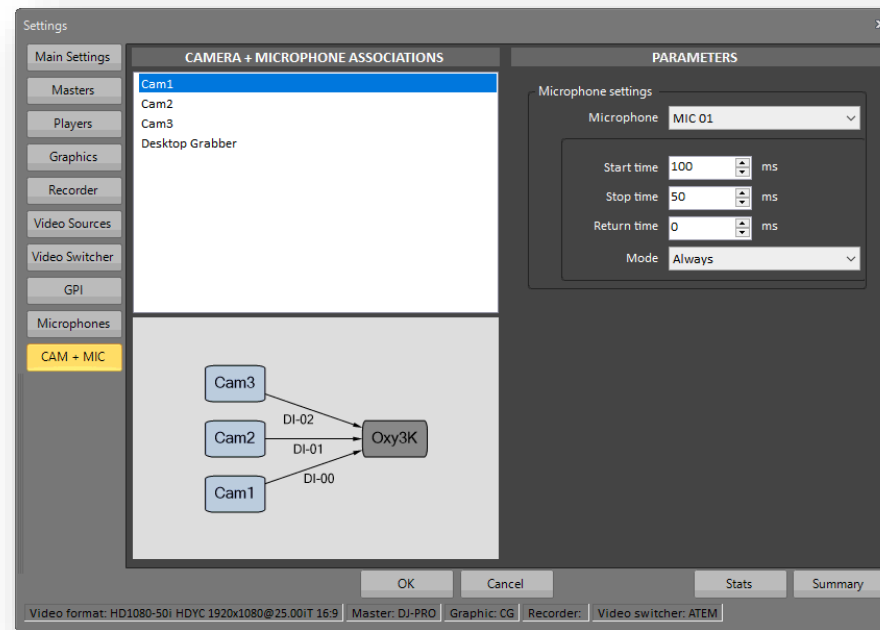
The System Configuration panel – CAM + MIC

In this panel you can associate the cameras to the microphones.

The list of available video sources is on the top left box, while on the bottom left box a summary diagram shows the association between the cameras and the GPI device, according to the parameters set. By selecting a resource from the list, the related parameters appear on the right.

Microphone   Microphone associated to the camera

Start time   The camera input will switch on after the related GPI contact will be enabled, according to the value set in this parameter

Stop time   The camera input will switch off after the related GPI contact will be disabled, according to the value set in this parameter

4.   LAYOUT EDITOR

The behavior of the whole Visual Radio system is defined by a set of rules that constitute a **SITUATION** (LAYOUT).

The tool to create, edit and save these **LAYOUTS** is the Layouts Editor, you can access it via the **[LAYOUTS CONFIG]** button on the Layout Widget.

At any moment it is possible to directly choose among the eight configurations associated to the eight virtual buttons of the **WIDGET** and to the eight buttons of the upper line on the **DEDICATED KEYBOARD**.

Two configurations can be very similar to each other, they may differ by just one parameter, or be completely different for most of the settings.

Layouts Editor

LAYOUT EDITOR |CAM + MIC
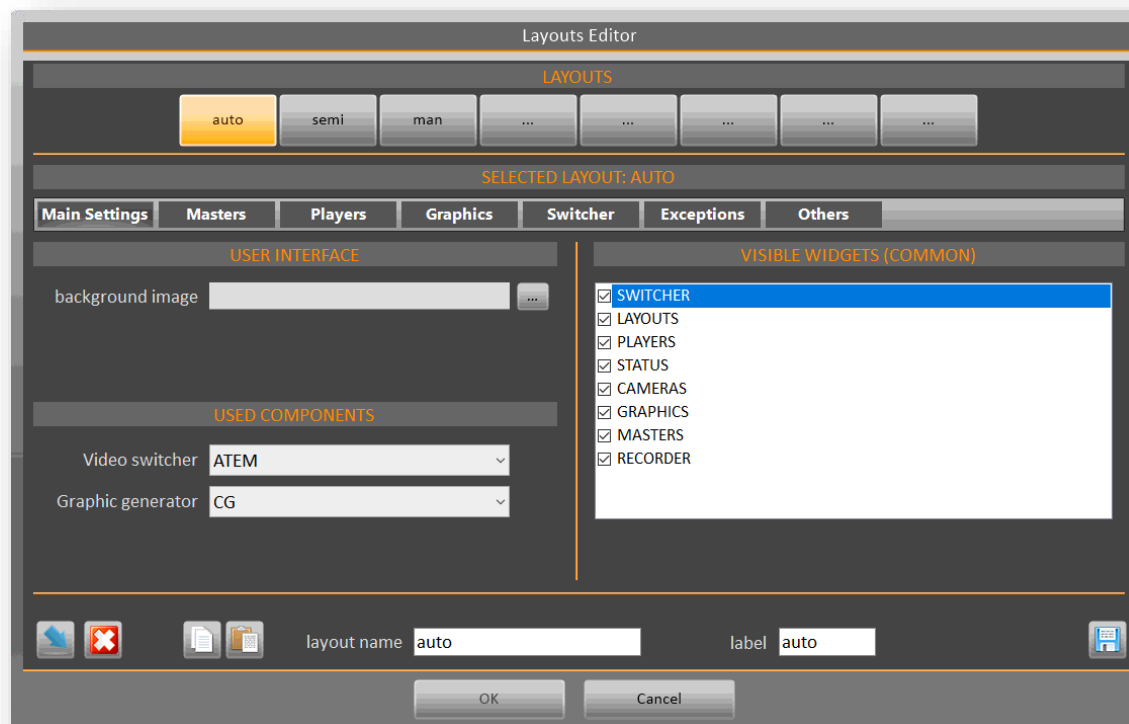
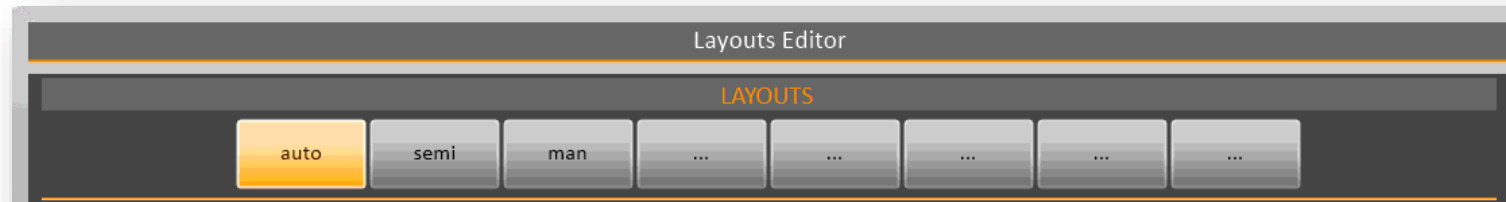At the top of the panel we find eight buttons, very similar to those of the operational interface, which correspond to the eight possible **LAYOUTS** that can be chosen through the graphical interface or through the **DEDICATED KEYBOARD**.
By selecting one of them we can modify all the parameters to configure the **LAYOUT** according to our needs and our desires.

Layouts Editor | Selection of the Layout to be changed

In fact, in the central area of the panel are, in analogy to the **SYSTEM CONFIGURATION** panel, several "tabs", each one associated with a different **SCOPE**, which contain all the parameters related to the selected **LAYOUT**.
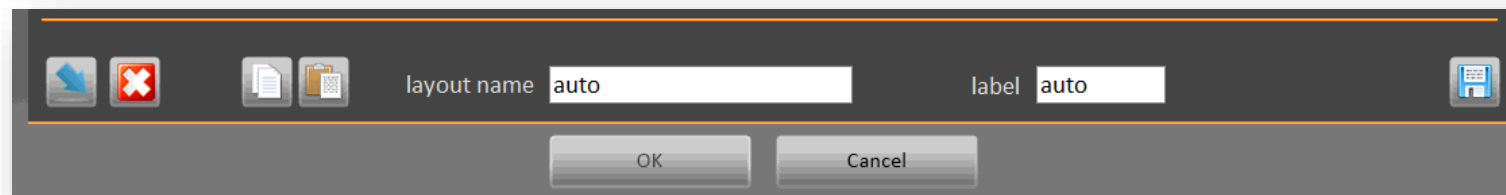
Layouts Editor | Layouts Management

At the bottom the buttons allow, from left to right, to reset the current **LAYOUT** to the default values, to copy and paste a **LAYOUT** and to save the changes done. We can also give the **LAYOUT** a name, which will be used to save it on disk, and a label that will be used on the interface buttons. The buttons on top replicate their size and graphic features, so you can appreciate the final appearance in real time.

4.1   MAIN SETTINGS
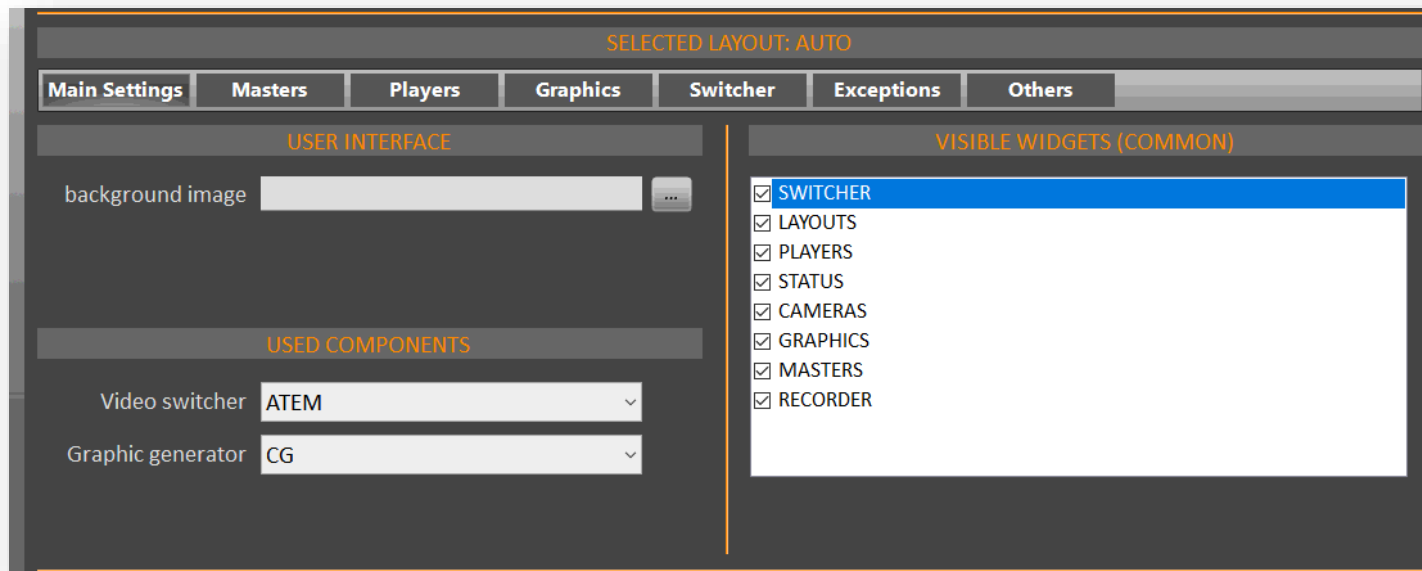
Layouts Editor | Main Parameters

The first "tab" concerns the general aspects of the selected **LAYOUT**. In particular, it is possible to select a background image for the user interface (GUI), the used video switcher and Graphic generator among the available ones in the System Configuration panel (see previous chapter), and the "widgets" visible on the GUI. The setting of VISIBLE WIDGETS is common to all **LAYOUTS**.

Each situation can have different levels of operation, so in some cases it may be useful to hide certain widgets.

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4.2 MASTERS
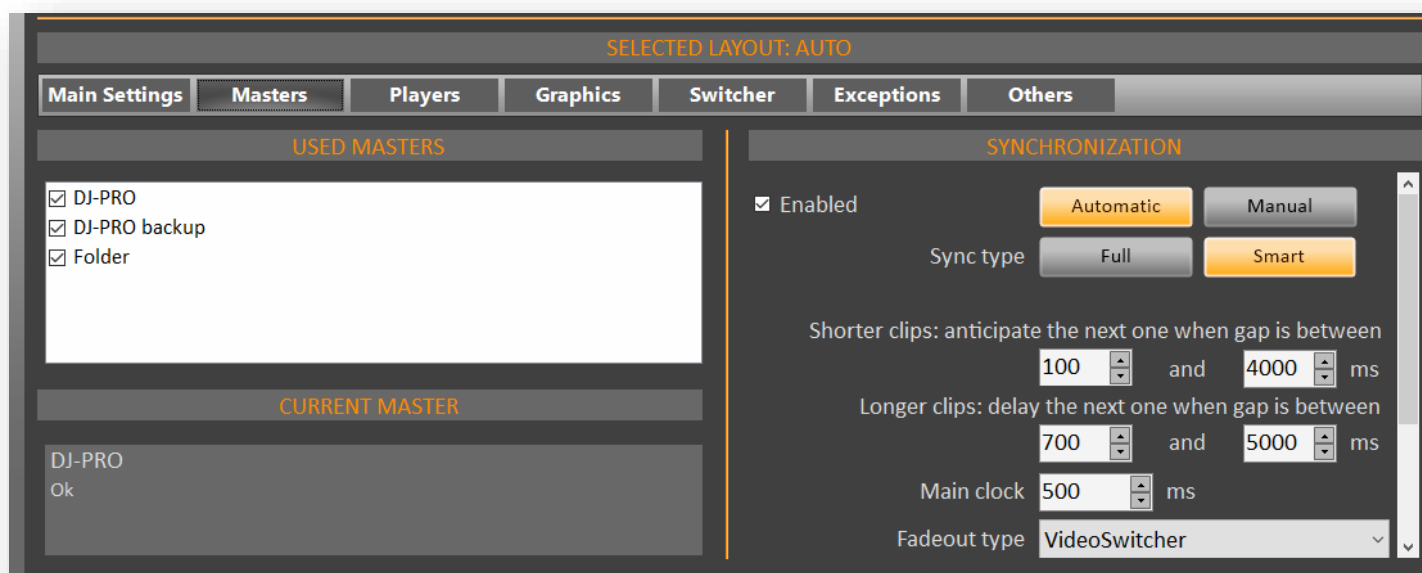
Layouts Editor | Masters

From USED MASTERS section it is possible to choose which automation (MASTER) can command the Visual Radio. The list of available masters, and their respective settings, is managed in the System Configuration panel (see previous chapter).

The choice of the Master is very useful, for example, to move from an on-air studio to another one, or to manage a night-time or weekend schedule completely separated from the main radio automation. In CURRENT MASTER section some information is provided to understand if the selected master is online, and what its state is.

The SYNCHRONIZATION section is common for all the Masters. The possible delays in the response of the TV system with respect to changes in radio automation, due to the communication of information, the preparation of clips and the different durations between audio and video media make the synchrony between the two signals complex. In order to better manage this complexity, the following parameters can be set:

If VjPro is set on **MANUAL**, it will not follow the Master's commands, will play the clip on the air till its end and will stop, however allowing the use of graphics and video source changes. If VJPRO is set on **AUTOMATIC** (default setting), it will follow the rules set in the *SYNC TYPE* section.

SYNC TYPE: by setting *Full*, the Visual Radio follows the radio automation perfectly; an event on the radio schedule immediately triggers the corresponding television event. In this way the two schedules run parallel almost synchronously, but some very short events, such as jingles, can only be transmitted partially. This mode guarantees almost perfect synchrony, apart from communication delays (of about one second), but it leads to an outgoing audiovisual flow disturbed by sudden interruptions. It is suitable for situations where there is perfect sync between each song and the corresponding clip.

The *Smart* mode is more balanced than Full mode, for which the user can decide the behavior of the system depending on the gap in duration between the song on the radio and the clip on TV. By selecting this mode, the parameters related to *Shorter clips:anticipate the next one if gap is between* and *Longer clips:delay the next one if gap is between* are enabled. This mode is suitable for situations where the lengths of video clips are very different from the corresponding audio tracks. This is the recommended mode, if calibrating the parameters in an appropriate manner.

MAIN CLOCK: indicates the processing speed of the main operations, the default is 500ms. Increase this value in case of low system performance.

DETECT NEXT INTERVAL: If the Master skips an audio on the air and more than the set value is missing to the end of the clip, VjPro also skips the corresponding clip, otherwise the clip will end according to the duration established by the Master.

BROADCASTED PERCENTAGE: indicates the minimum percentage for the system to consider a clip as transmitted (useful for reports)

STATUS TELLER INFO: indicates the Master's IP address and UDP listening port used by for communication

SCRIPT PORT: VjPro's listening port for the reception of script commands by the Master (e.g.: airing of graphic page).

4.3 PLAYERS

Layouts Editor | Players

In this panel it is essentially possible to decide whether to work with a single player, with sharp cuts between the clips, or with two players, with the possibility of inserting transitional effects between two events. The 1-player mode is useful in some emergency situations: when a player is not available, for example due to a software error, the system can continue with only one player.

The *Preview Type* allows you to choose the appearance of the preview in the top part of the PLAYERS widget.

Stops players when Master stops in MANUAL: if this parameter is enabled, when the Master is in MANUAL mode and the audio is shorter than the clip, VjPro stops the clip at the same time the audio is finished. If the parameter is disabled, the clip continues until its natural end.

Allow mix on same player (stopping previous clip): in particular situations, it speeds up the transition between a clip and the next, sacrificing the transition effect

4.4 GRAPHICS
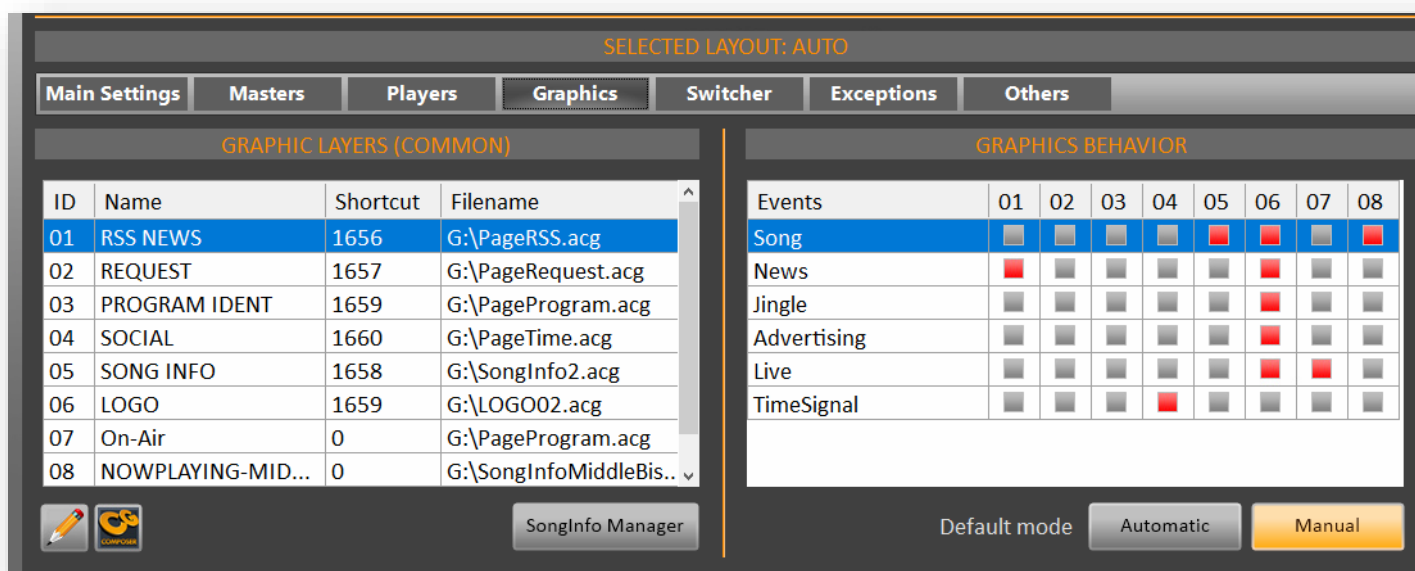
Layouts Editor | Graphics

From this panel it is possible to manage the main graphic contributions of the VJ-Pro console. For more information on this subject you can consult **APPENDIX "C"**: **Some hints for graphics**.

On the left side (GRAPHIC LAYERS) it is possible to associate each of the eight buttons of the user interface on the GRAPHICS widget to a graphic layer, this association is common to all **LAYOUTS**. The system can display different independent levels of graphics in transparency, that are superimposed on the video images starting from level n.0 (deeper).
The graphic layers may have a different name from the one of the source file, for a more immediate recognition. The chosen name will appear on the related button of the GUI.

To edit a graphic layer, double click on its line and the Edit mask will open.

Click on the [...] button to select a .acg file related to a graphic project (a preview of the chosen file will be displayed on the bottom of the window), then set the *Name* that will appear on the correspondent button in the GRAPHICS widget. The other parameters are:.

Key: unique keyword to be set for each graphic page

Layer: name of the layer on which the graphic page is displayed. NOTE: it is possible to set the same Layer on several pages, but it is not possible to broadcast two or more pages simultaneously with the same Layer.

ZOrder: indicates the z coordinate (depth) of the Layer, where "0" corresponds to the background

SHORTCUT: default numeric value associated with the quick selection key of the dedicated USB keyboard. It is advisable not to change this value
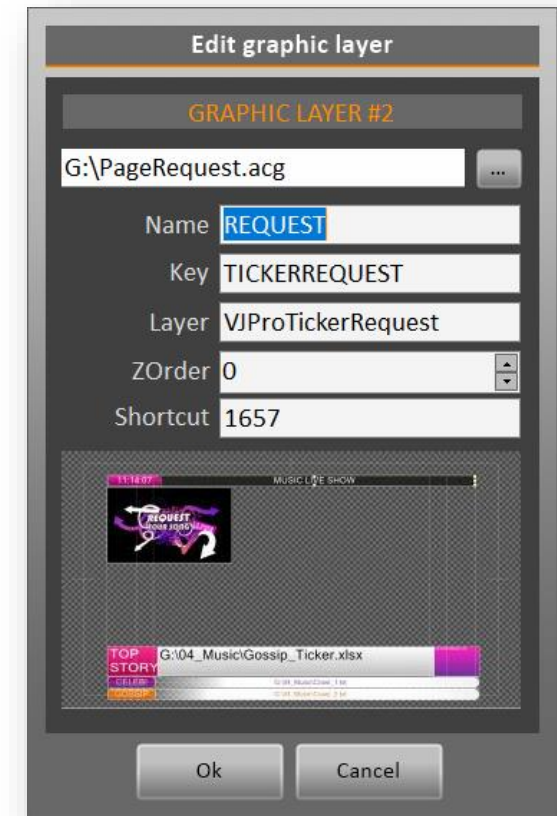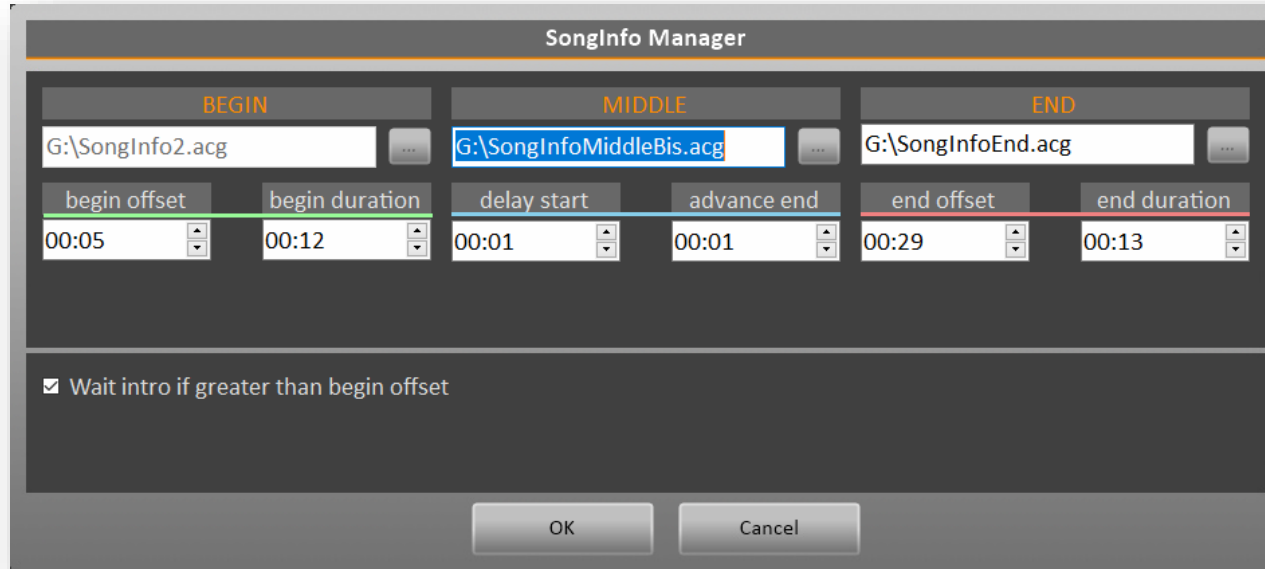
Layouts Editor | Graphic layer

The right panel (GRAPHICS BEHAVIOR) allows to associate the different graphic layouts to specific events or situations.
For example, it will be preferable to have the station logo and the song info during the playout of a videoclip, and additional information such as the program contacts and the speaker's name when a live camera is on air ….
It is also possible to establish whether in the current situation an automated graphic management is needed, according to the rules established previously, or a completely manual management of it, through the GUI or the **DEDICATED KEYBOARD**.

Particular importance is played by the displaying of the information on the song on the air. The SONGINFO window is dedicated to this, it is accessible via the [SONGINFO MANAGER] button.

"SongInfo" configuration panel

During the execution of a song and its video clip we can show the related information which can be sent to VJ-PRO Console by the radio automation and are automatically inserted in the graphic layout. These data include the artist's name, the song's title and the year in which it was published.

More information on how best to manage this data can be found in **APPENDIX "C"**: **Some hints for graphics**.

Through this panel it is possible to set all the parameters related to this functionality. We can assign up to three graphic layouts containing this information:

- "BEGIN" is displayed at the beginning of the video clip, starting after the time set in "begin offset", and remaining on the air for the duration indicated in "begin duration".

- "MIDDLE" is displayed during the video clip, starting after the time set in "delay start" from the disappearance of the "BEGIN" layout and remaining on the air until the time indicated in "advanced end" before the "END" layout appears.

- "END", is displayed at the end of the video clip, starting with a time advance set in "end offset" before the end of the clip and remaining on the air for the duration indicated in "end duration".

4.5 SWITCHER
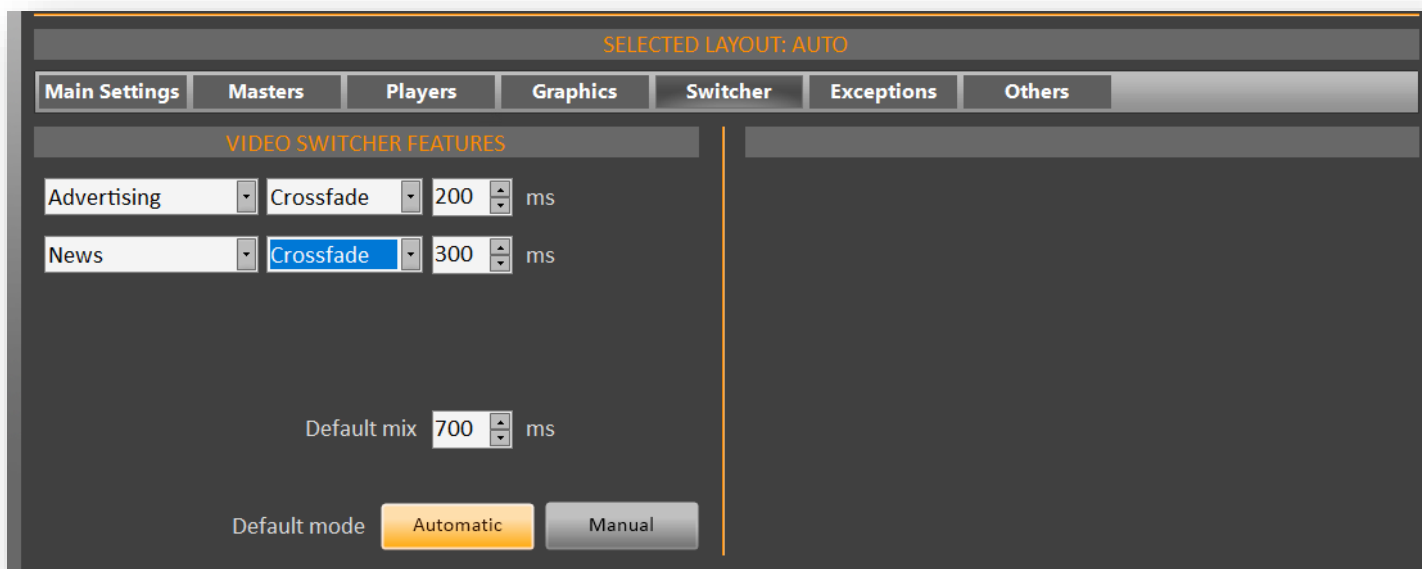
Layouts Editor | Switcher

In this panel you can indicate which crossfade values the switcher should use in the transitions between the clips

FADEOUT TYPE:

NoFadeoutOut: no fadeout

VideoSwitcher: VjPro uses the value set in the video mixer

Master: VjPro uses the fadeout value communicated by the Master (e.g.: DjPro)

Target: VjPro uses the fadeout value set in the *Switcher* section of the LAYOUT CONFIG

MasterThenTarget: VjPro uses the fadeout value communicated by the master when present, otherwise it uses the value set in the *Switcher* section of the LAYOUT CONFIG.

Default mix: if *Fadeout Type* is set to "Target", the playout will use this value for the mixout.

Default mode: indicates the initial condition of the SWITCHER widget mode.

4.6 EXCEPTIONS
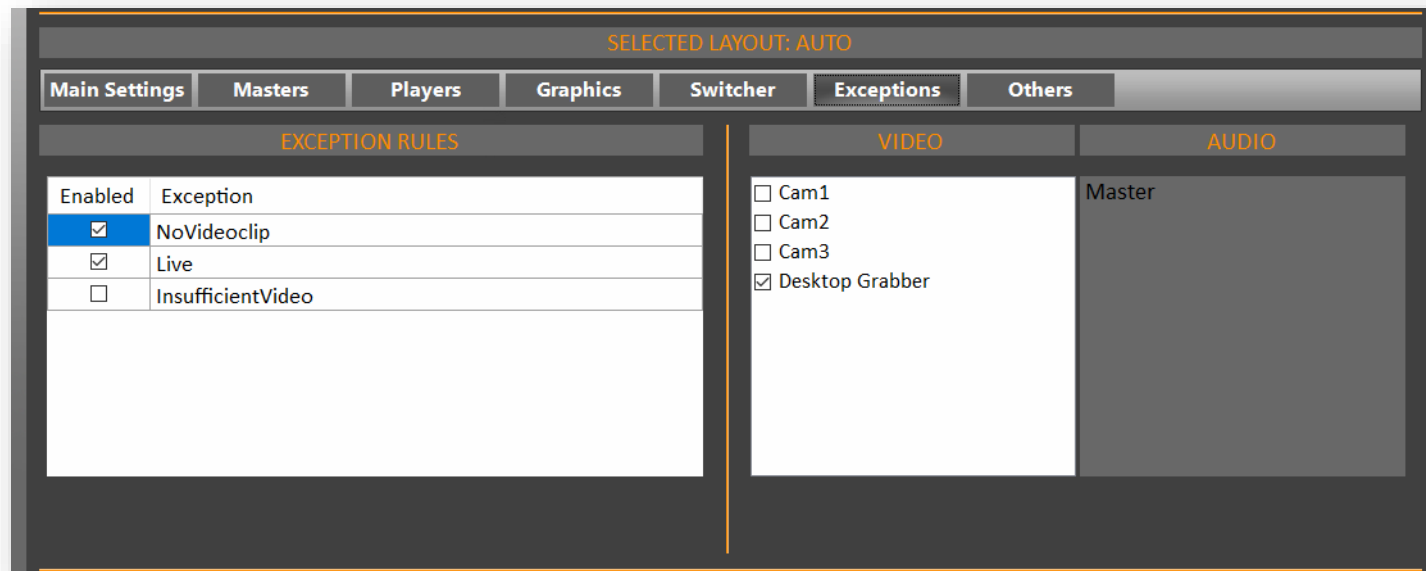
Layouts Editor | Exceptions

This panel allows you to set some rules in order to define which behavior the system must adopt in some particular situations on the air. You can manage the following cases:

- *NoVideoclip*: if the video clip associated to the audio on the air is not available or faulty, the system can automatically switch to another video source, in order to avoid black screen.
- *Live*: when you raise the fader of a microphone, the associated camera is aired (see "CAM+MIC" paragraph in previous chapter).
- *InsufficientVideo*: if the video clip on the air is longer than the associated audio, and the gap between them is higher than the one set in the SYNCHRONIZATION section in the MASTERS panel, the system can automatically switch to another video source, in order to avoid black screen.

Select an *Exception* in the EXCEPTION RULES left box, then in the VIDEO box select which video sources will be involved in that rule. The list of available sources is managed in the VIDEO SOURCES panel of the System Configurator (see previous chapter).
Select a checkbox in order to enable the related rule.

If you select more than one video resource for a rule, video sources will alternate on air when this rule is applied.

The AUDIO box shows which audio will be used by VjPro when the related rule is applied.

4.7 OTHERS
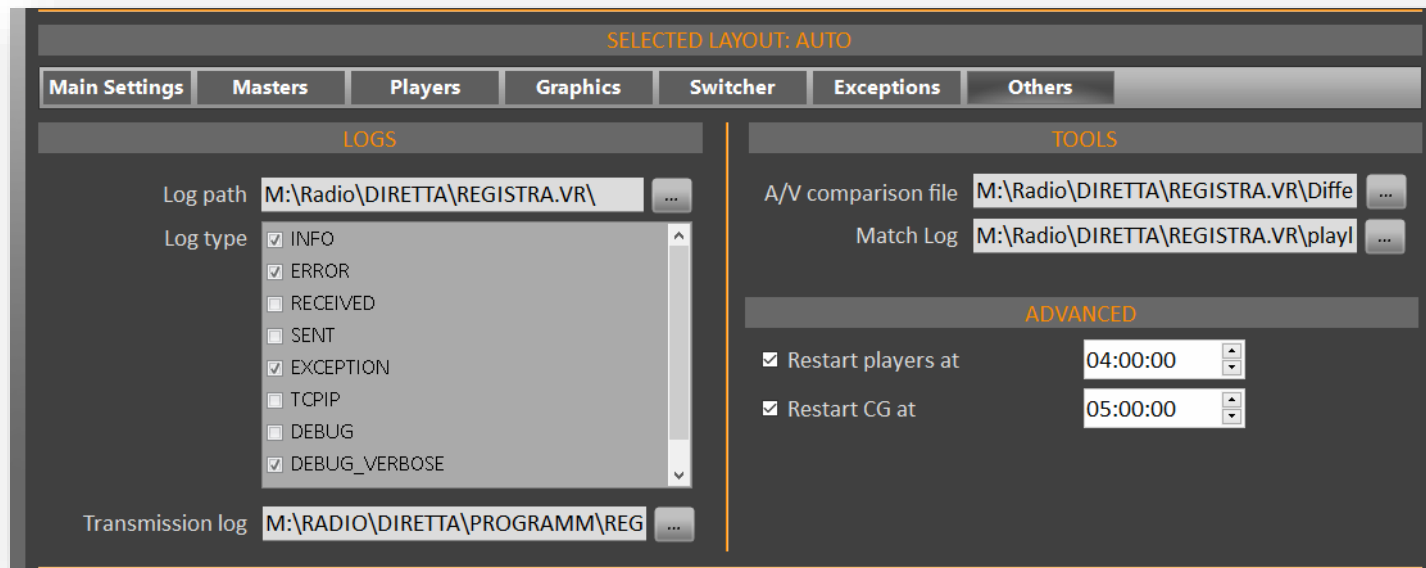
Layouts Editor | Others

This panel is for use by the administrators of the VJPRO system.

In the LOGS box it is possible to set the path for the operations and transmissions logs. In the *Log type* menu you can define which information to write in the operations log.

These logs are useful, both to gather information in case of unexpected behavior of the system, and for the generation of broadcast reports when requested.

In the TOOLS box, the *A/V Comparison file* is a log that shows the difference in duration between the clip and the respective audio. *Match LOG* is an advanced log that writes the contents of each player at every change of playlist (used for specific in-depth checks / debugging).

If you are experiencing any hardware issues due to the prolonged use of the engines, in the ADVANCED box you can schedule a time for a daily restart of the players and the CG. Working with two players, the restart is managed with a seamless workflow, acting first on one player and then on the other, thus avoiding interruptions on the air.

Restarting the CG engine only causes a temporary disappearance of the graphic on the air.

We suggest to schedule the restart of the engines in the night time, so as to cause the least possible disservice.

5. INSTALLATION

5.1 HARDWARE REQUIREMENTS

The hardware requirements for the VjPro machine in the Visual Radio system may vary depending on the type of system that has been designed for the needs of the customer.

Below is an example of a VjPro machine in a system with BlackMagic's *ATEM Production Studio 4K* Video Switcher and Axel Technology's *Oxygen 3000* audio console:

- Motherboard: Asus Z270 Mark1
- CPU: Intel Core i7
- Power supply: Fortron Hydro G 650, 650W
- RAM: 2 x 8GB 2133MHz DDR4
- System HDD: 240GB SSDNow UV400 SATA
- Storage HDD: 2 x 4TB HD Seagate SATA
- Video Card: Geforce GTX 1050, 2GB
- Video Card: BlackMagic Decklink Duo 2 PCIe

5.2 AUDIO/VIDEO SIGNALS ROUTING

What is the video and audio signal routing in VJPRO system? Here you can see an example scheme, which we will explain below:
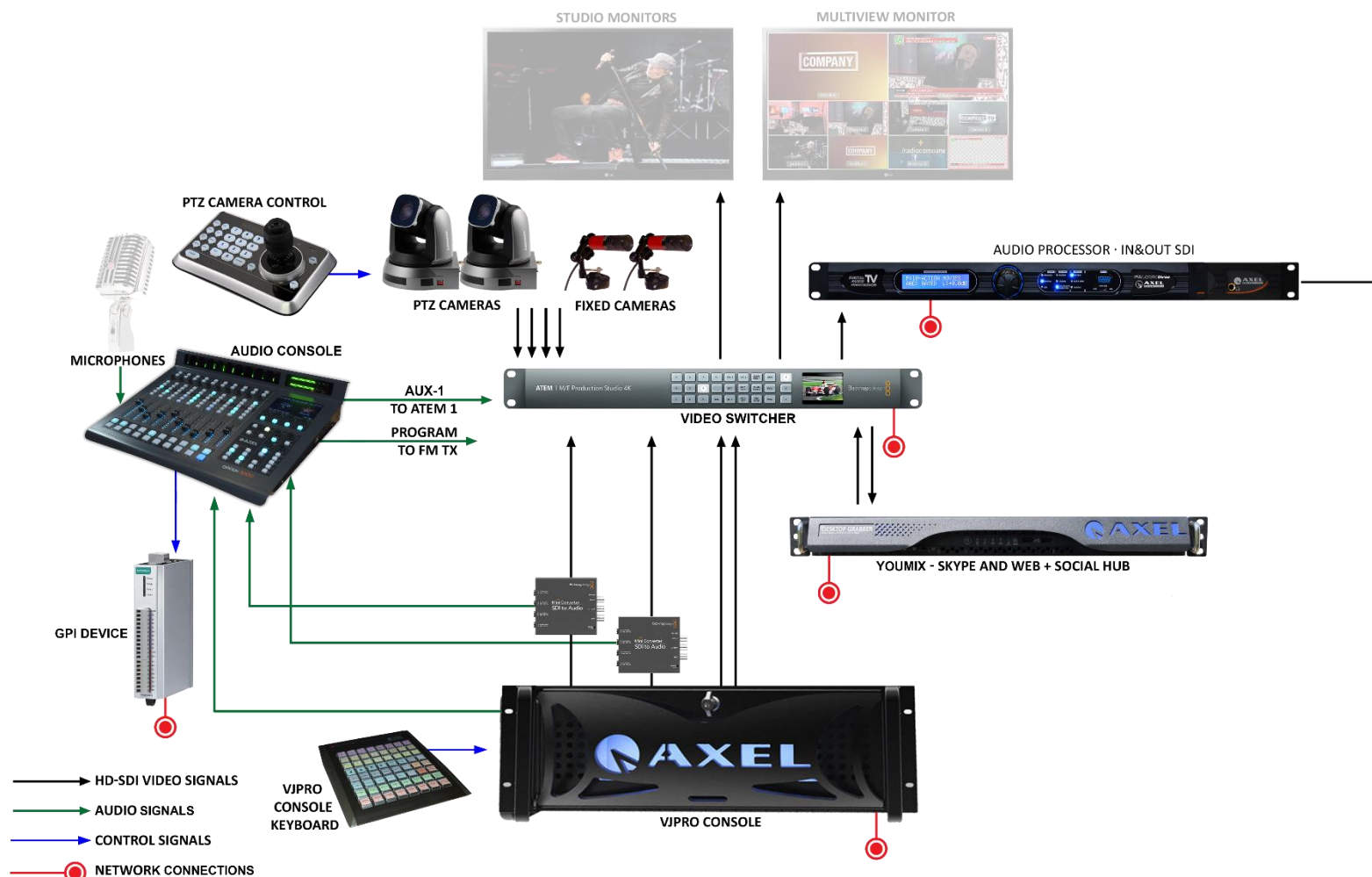
Audio/Video signal routing

VIDEO ROUTING

- The SDI connectors of the BlackMagic video card in the VJPRO CONSOLE, related to each player, must be connected to an "SDI to Audio" converter (see AUDIO ROUTING for more details), then the SDI output of each converter must be connected to the Video Switcher input.
- The SDI connectors of the BlackMagic video card in the VJPRO CONSOLE, related to the graphics (Key+Fill), must be connected to the Video Switcher input.
- All the cameras and the other video sources (such as Axel Technology's Youmix, in the example scheme) must be directly connected to the Video Switcher inputs through SDI cables.
- Since we are dealing with a TV system that should broadcast music contents, we recommend to process the audio signal of the Video Switcher's main output by connecting it to a digital audio TV processor (e.g.: Axel Technology's **Falcon Three**) which then must be connected to the TV transmitter.
- The Video Switcher is also provided with two HDMI ports, one to connect a multiview monitor showing the available video resources and the other for a monitor showing a preview of the main output.

AUDIO ROUTING

- As written before, the output of each video player, coming from the BlackMagic video card, must be connected to an "SDI to Audio" converter. This device has the function of splitting the incoming audio/video signal into an SDI video signal and an analogic audio signal.
- The analogic audio output of each "SDI to Audio" converter must be connected to a LINE input of the audio console.
- The PGM output of the audio console must be connected to the FM audio processor that will be connected to the Radio transmitter.
- One of the auxiliary outputs of the audio console (e.g.: AUX-1) must be connected to the analog audio input of the Video Switcher.

With this configuration we are able to manage the audio routing of all the Radio and TV sources from the audio mixing console, by setting the PGM bus on the channels which must be heard only on Radio (e.g.: radio automation playout), the AUX1 bus on the channels which must be heard only on TV (e.g.: VjPro players), and both PGM and AUX-1 on those channels which must be heard on Radio and TV at the same time (e.g.: microphones).

Moreover, if your audio console is Axel Technology's **Oxygen 3000**, a special setup allows you configure it in order to link the channels of the two TV players to the fader of the radio automation channel, so that you can manage the audio level of both Radio and TV with one fader. In this way, the operator on Oxygen 3000 will be able to lower the audio levels of the Radio and TV channels at the same time when the program host and his guests are speaking on the air.

5.3 SOFTWARE INSTALLATION

The installation / update of the VjPro software is very simple:

- launch the software installation CD, or copy *VJProSetup.exe* and *AxelMMPackSetup.exe* files into a local folder
- run *VJProSetup.exe*, confirming the messages that appear.

The first part of the process will install VjPro Server and VjPro Client, while the second part will install the multimedia engines (players and CG) and the libraries for communication between the engines and the BlackMagic video cards.

6. APPENDIXES

6.1 APPENDIX A | VIDEO SWITCHERS

This appendix is dedicated to the standard configuration of the VjPro Console with the different kind of Video Switchers compliant with Visual Radio system

ATEM PRODUCTION STUDIO

Blackmagic's *Atem Production Studio* is the most common Video Switcher used in Visual Radio systems. Below a scheme of the available connections:
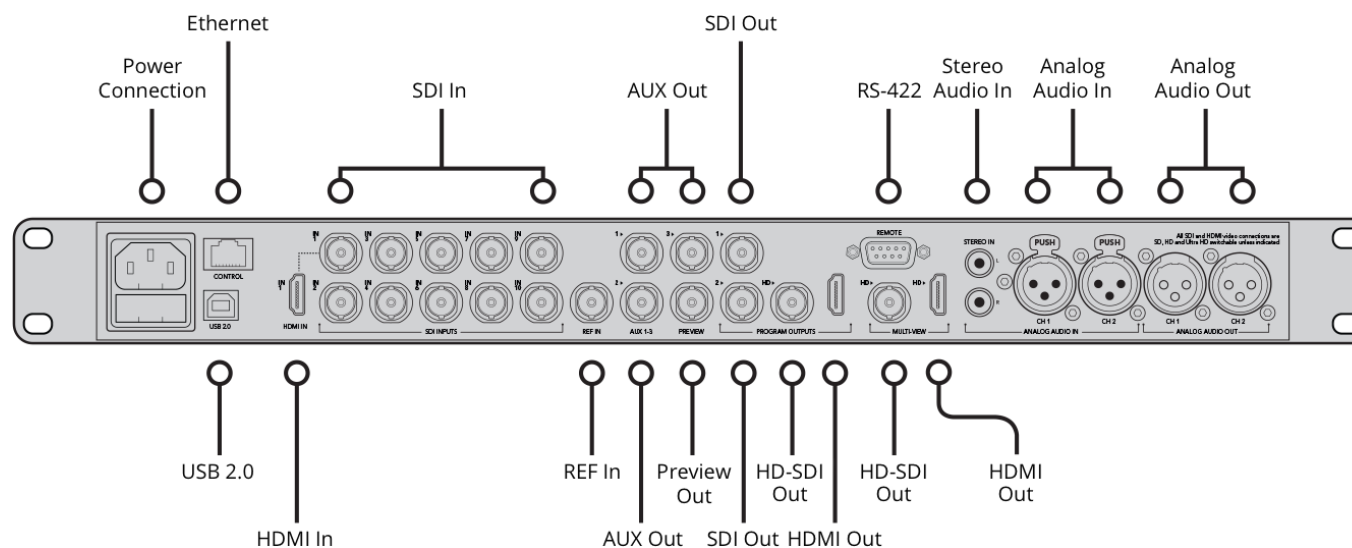
First configuration: connect Atem to the LAN by the Ethernet port, and to the PC by the USB 2.0 port; run the *Atem Control Software* and click on "Launch ATEM Setup" to configure the IP address and the main settings. See the product's manual for more information.

Here below an example on how to connect the Atem video switcher in the Visual Radio system:

CONNECTIONS	DEVICES
SDI In from 1 to 4	Cameras
SDI In 5	Player 1
SDI In 6	Player 2
SDI In 7	Video Source (e.g.: YouMix)
SDI In 8	Video Source
SDI In 9	Key
SDI In 10	Fill
Analog Audio In	Audio Console output (e.g.: AUX-1)
SDI Out 1	Digital Audio TV Processor (or transmitter)
HDMI Out 1	Program preview monitor
HDMI Out 2	Multi-view monitor

VMIX

vMix is a software-based mixing console capable of managing both physical and virtual (NDI) devices, and allows you to live stream the video output.
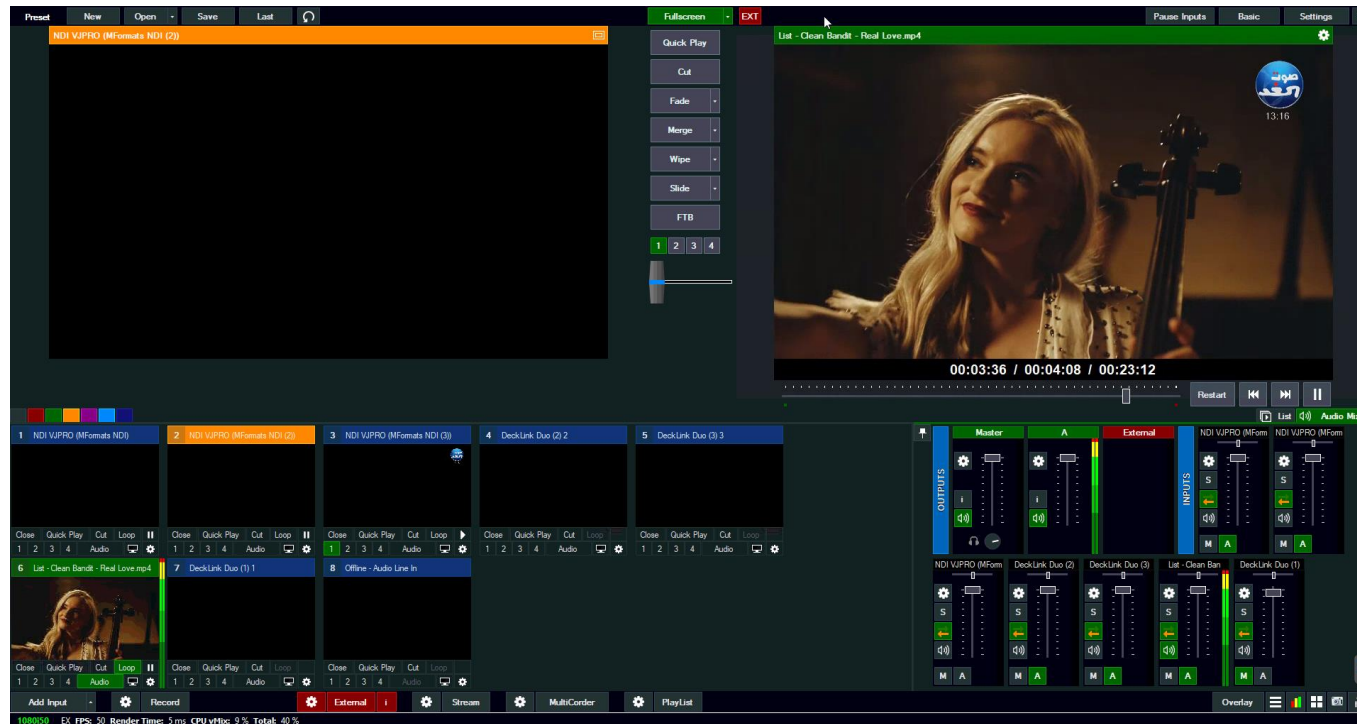
The recommended system requirements for vMix are:

Operating System	Windows 10
Processor	Intel Core i7 Processor 3Ghz+
Memory	8GB DDR3
Hard Drive	Solid State Disk
Graphics Card	Dedicated Nvidia Card with 1GB Memory
Screen Resolution	1920x1080

6.2 APPENDIX B | KEY MODE

The key mode establishes how the graphics are superimposed on the video, and in particular how to manage transparencies.

The graphics signal is provided by the graphics workstation via a video card.

KEY OFF

When the key is disabled, the graphic completely covers the screen, without inlaying. The background is also sent to the video output, usually black or uniform in color. Video inlay is performed by a video mixer using proprietary color key (ChromeKey) or brightness key (Luma Key) effects. The areas of the graphic image that are close to a certain color tone or brightness are made transparent, according to adjustable tolerances. Video inlay is generally of poor quality.
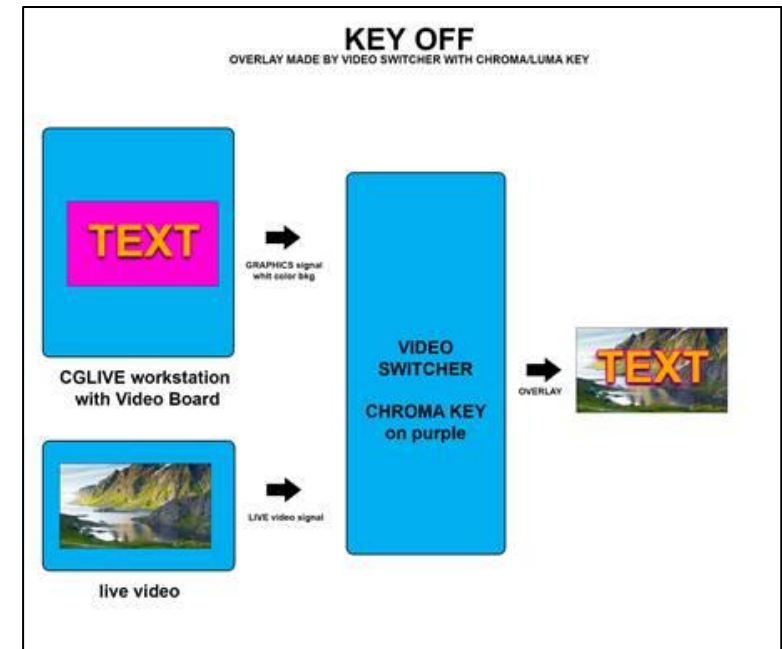
Video key set to OFF

KEY INT

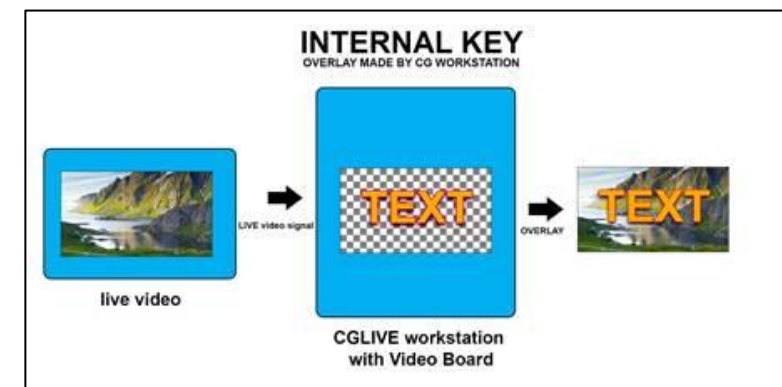By selecting the internal key mode [INT], the graphic is superimposed on the video passing through the graphics card. The video signal is sent to the input of the card, which processes the electronic inlay internally, and outputs the signal with the superimposed graphics.

It is necessary to use a card with video input and output (e.g.: BlackMagic's *Decklink Studio*).

Video key set to INT

In general, the quality is good, but in most cases if the video card has issues, or if the computer freezes or is turned off, the video signal does not pass.

KEY EXT

By choosing the external key mode [EXT], the graphic is superimposed on the video signal via a video mixer. The video card provides two separate signals: the "fill" signal, which constitutes the actual contributions, and the "key" signal, a gray-toned image that identifies the more or less transparent regions of the screen. A video card that provides both outputs (such as the BlackMagic's *Decklink Extreme 4K*), and a mixer capable of handling the "line key" are required.

This mode guarantees the highest quality of inlay, complete management of transparencies and maximum flexibility in signal handling.
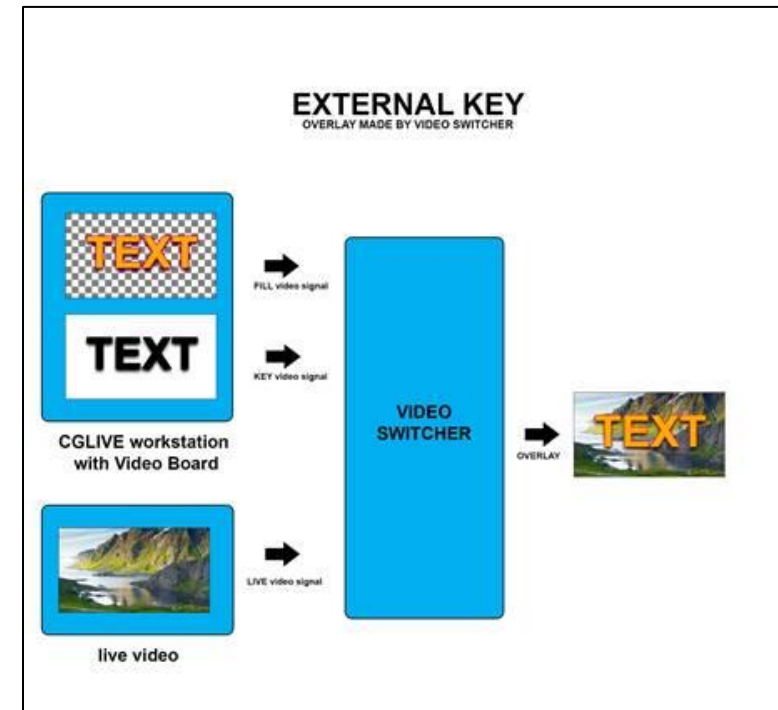
Video key set to EXT

6.3 APPENDIX C | SOME HINTS FOR GRAPHICS

VJ-Pro Console can enrich the schedule of Visual Radio through engaging and dynamic graphic contributions. The system allows to superimpose up to eight different graphic layers, which can be used simultaneously in every possible combination, to the images generated by the core of the visual radio, coming from the cameras, from the multimedia players and from the other video sources.

The graphic pages can be managed with Axel Technology's free **CG Composer** tool. This software, which can be freely installed on more than one Pc, allows to create and save the individual pages associated with the different graphic layers.
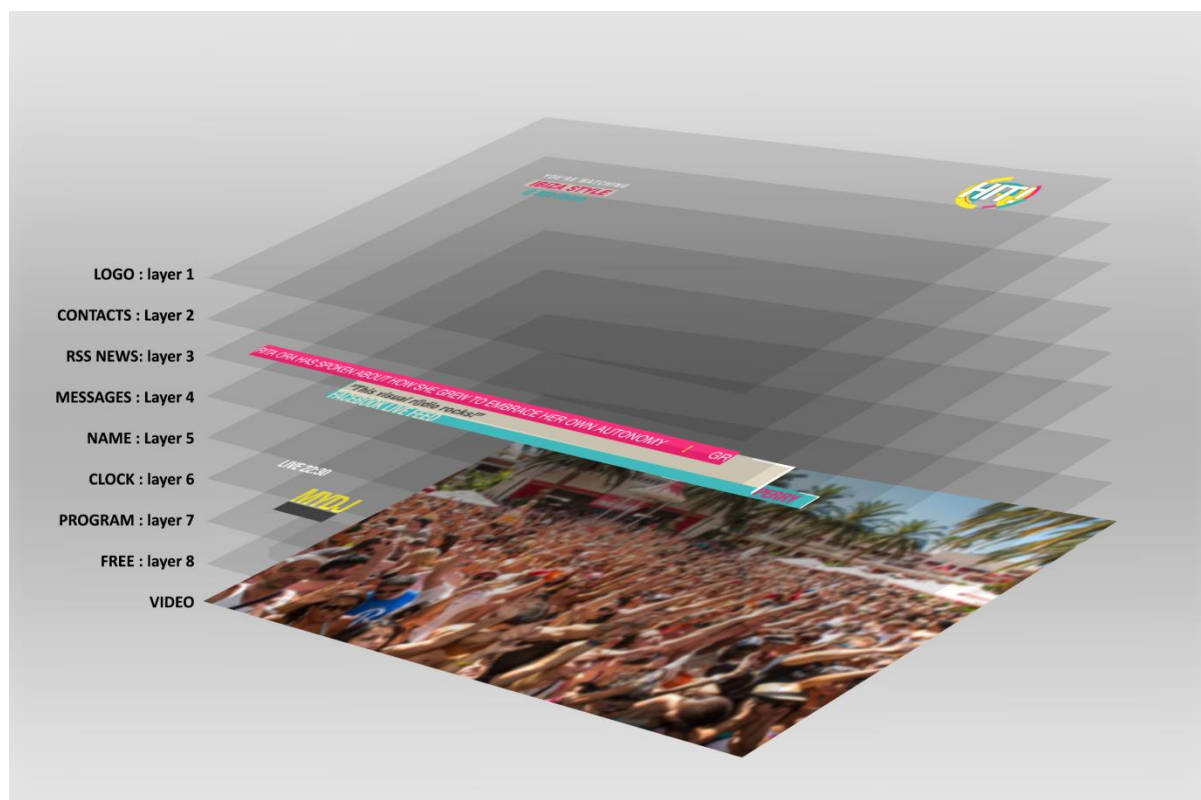
The layered layout of the VJ-Pro Console graphics

These graphic layers can be represented as real layers that overlap.

Level 1 is the upper one, level 2 is immediately below, and so on until the video level. It is essential to understand this arrangement so as to be able to create in the correct way the entire graphic system of the visual radio. Keeping that in mind, you can create even very complex graphic constructions, without unpleasant overlapping of the elements.

In this regard, we suggest to set the entire structure on a single page, to correctly evaluate the position, size and pleasantness of the overall layout, thus simulating what will be displayed, in the different combinations, during the airing phase. It is then very simple, through CG Composer, to copy the individual elements on an independent page and save it with only those elements.

The graphics typically used in a program managed by VJ-Pro Console

These contributions are made up of graphic pages generated by the CG Composer editing tool, provided free of charge, we advise you to refer to its manual to learn its correct operation and fully exploit its potential. For this particular use it is advisable to appropriately plan the graphic layout that will have to identify in an univocal, effective and pleasant way the transmissions of your Visual Radio.

6.4 APPENDIX E | THE USB DEDICATED KEYBOARD

To facilitate the selection of the options proposed by the user interface, a custom keyboard has been created. The layout of the keys recalls the layout of the commands on the GUI in order to facilitate their learning.
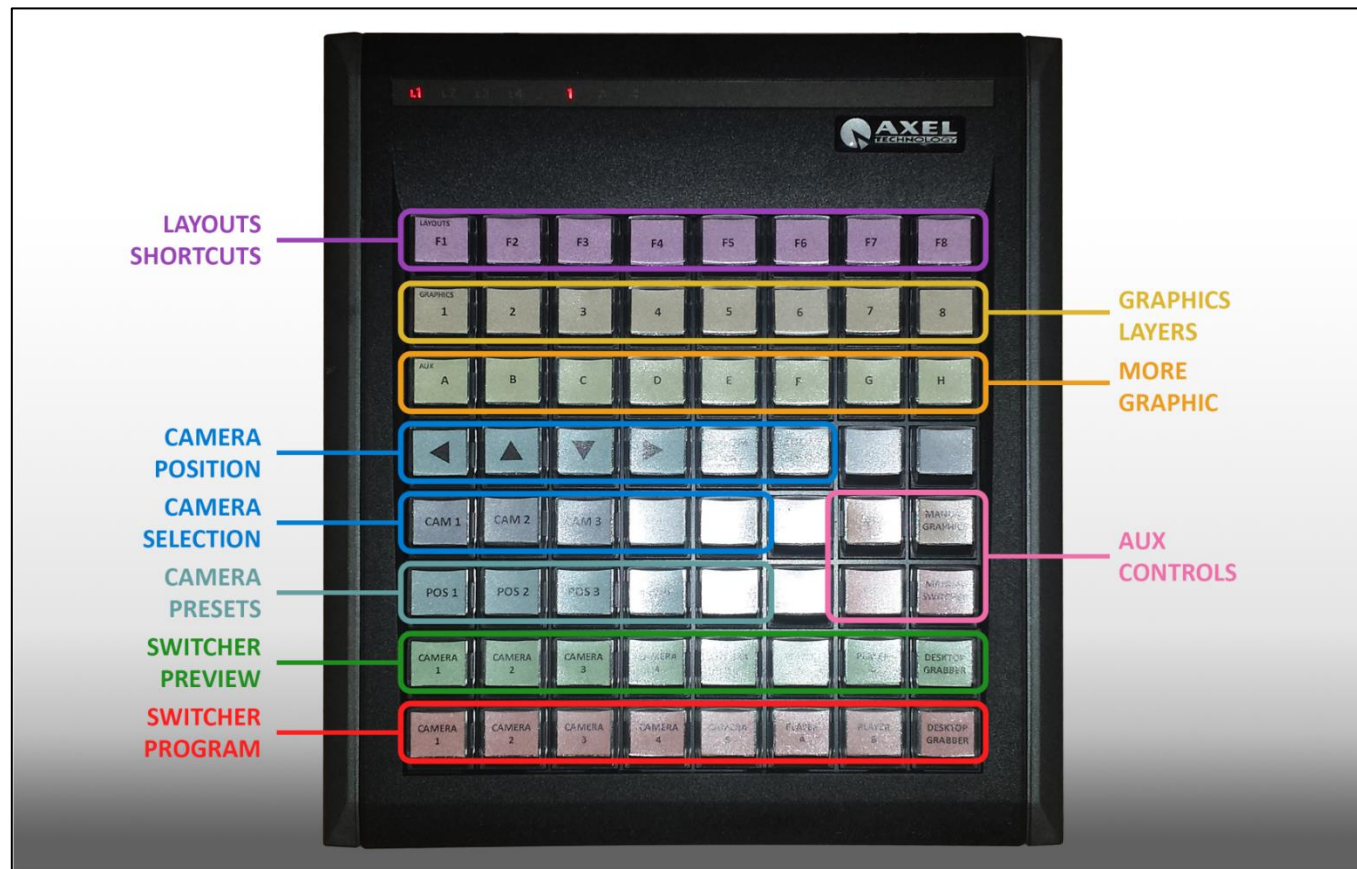
The USB dedicated keyboard

6.5 APPENDIX F · GLOSSARY

AXEL TECHNOLOGY

AXEL TECHNOLOGY has been dealing with audio and video equipment for radio and television for thirty years. It is the ideal partner for your new **VISUAL RADIO** and for any other requirement in the field of radio and television.

VJ-PRO CONSOLE

It is the solution of AXEL Technology that integrates the radio and television areas in an automatic and effective way, allowing to realize a VISUAL RADIO in a simple and convenient way without changing the working style.

VISUAL RADIO

It is the extension of a usual radio broadcaster in the television field. There are different types of VISUAL RADIO; generally we mean the integration of cameras, videoclips and graphics to the usual radio equipment, to expand the listening area and increase audience, contacts and advertising.

SCOPES

A scope is a set of **RESOURCES** sharing the same type. Often scope and **RESOURCE** can be used as synonyms.

EVENTS

An event is a variation in one of the resources, managed by radio automation, by the director, by the conductor or by external causes. Example of events are: the sequence of the music tracks in the radio playlist; rising an audio mixer fader; a communication coming from a device through the network.

SYSTEM CONFIGURATION

It is the software window through which to set the basic parameters of each **SCOPE** of VJPro Console.
It is usually used in the initial system setup phase, or when one or more **RESOURCES** are changed. It is a section for "insiders": please manage these parameters carefully!

RESOURCES

A resource is a hardware device or a software component necessary for the operation of the system.

RULES

A rule is the definition of the behavior of a **RESOURCE** in its context and in relation to the others, according to the events that will happen.

LAYOUTS

A LAYOUT is the set of **RULES** that control the behavior of the **RESOURCES** in the different **SCOPES**.

VIDEO STANDARD

The parameters of resolution and frame rate that uniquely define the type of video signal. ….

WIDGETS

An independent graphic element dedicated to the management of a **SCOPE**.

VIDEO SWITCHER

It is a device able to mix video and graphic signals together, in order to get a single resulting signal to be broadcast or streamed. For more information on the potential of different compatible video switchers with **VJ-PRO CONSOLE** you can consult **APPENDIX A: VIDEO SWITCHERS**

DECLARATION OF CONFORMITY

Manufacturer: **AXEL TECHNOLOGY S.r.l.**
Company title**: VIA C. DI SABBIUNO 6/F - 40011 ANZOLA EMILIA - BOLOGNA ITALY**

DECLARES UNDER ITS OWN RESPONSIBILITY THAT THE FOLLOWING EQUIPMENT

MODEL: **VJPRO CONSOLE COMPACT 8TB-4SDI**
DESCRIPTION: **Broadcast visual radio automation**

IS COMPLIANT

To the requirements and all characteristics enacted from Community Directive:

✓ **2014/30/UE "EMC" Electromagnetic Compatibility**
✓ **2014/35/UE "LDV" Low Voltage Directive** and following Harmonized Standards:

- **EN 60950-1: 2006+ A1: 2010 + A2:2013 + A12:2011 –** Information technology equipment. Safety. General requirements

- **EN 55024:2010 +A1:2015 –** Information technology equipment. Immunity characteristics. Limits and methods of measurement

- **EN 55022:2010 + EC:2011 –** Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement

- **EN 50581:2012 -** Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

The same product is also complies with the requirements of the Community Directive:

✓ **2011/65/UE on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS 2)**

Remark: The present product must be installed as showed in the installation manual provided together with the equipment and used at the sole scope for wich it has been manufactured**.**

Anzola Emilia (BO) Italy, **23/06/2016**

C.E.O.

Giuseppe Vaccari

Axel Technology s.r.l.
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C.f/P.Iva: 017353031203 - R.E.A.: 369206/BO
info@axeltechnology.com

DICHIARAZIONE DI CONFORMITA'

Nome Fabbricante: **AXEL TECHNOLOGY S.r.l.**
Ragione Sociale: **VIA C. DI SABBIUNO 6/F - 40011 ANZOLA EMILIA - BOLOGNA ITALY**

DICHIARA SOTTO LA PROPRIA RESPONSABILITÀ CHE IL PRODOTTO

MODELLO: **VJPRO CONSOLE COMPACT 8TB-4SDI**
DESCRIZIONE: **Automazione broadcast visual radio**

RISPETTA

i requisiti essenziali e tutte le caratteristiche richiamate dalle Direttive comunitarie:

✓ **2014/30/UE "EMC" Compatibilità Elettromagnetica**
✓ **2014/35/UE "LDV"   Bassa Tensione**

e alle seguenti normative tecniche armonizzate:

• **EN 60950-1: 2006+ A1: 2010 + A2:2013 + A12:2011 –** Apparecchiature per la tecnologia dell'informazione – Sicurezza - Parte 1: Requisiti generali
• **EN 55024:2010 +A1:2015** – Apparecchiature per la tecnologia dell'informazione - Caratteristiche di immunità - Limiti e metodi di misura
• **EN 55022:2010 + EC:2011 –** Apparecchi per la tecnologia dell'informazione - Caratteristiche di radiodisturbo - Limiti e metodi di misura
  •**EN 50581:2012** - Documentazione tecnica per la valutazione dei prodotti elettrici ed elettronici in relazione alla restrizione delle sostanze pericolose.

Lo stesso prodotto è anche conforme ai requisiti della Direttiva comunitaria:

✓ **2011/65/UE sulla restrizione dell'uso di determinate sostanze pericolose nelle apparecchiature elettriche ed elettroniche (RoHS 2)**

Nota: il presente prodotto deve essere installato come previsto dal manuale d'uso fornito a corredo dell'apparato ed utilizzato ai fini del servizio per il quale è stato fabbricato e destinato.

Anzola Emilia (BO) Italy, **23/06/2016**

Presidente del C.d.A.

Giuseppe Vaccari