datavideo®

TRACKLESS VIRTUAL STUDIO SYSTEM

TVS-1000

INTRODUCTION AND FEATURES

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TVS-1000 Introduction

Virtual studio technology is becoming increasingly popular. However, until now, there has been a split between broadcasters that can develop sophisticated sets in-house, tailored exactly to their needs and other users that have had to rely on restrictive set templates.

Datavideo's TVS-1000 was developed to bring dynamic, flexible virtual set technology to local TV stations, educational institutions, web channels and corporate organizations. It's perfect for training programs, budget television studio shows, product presentations or corporate TV to a broadcast standard.

TVS-1000 is available an an excellent price, features a highly intuitive interface, an ergonomic control panel and an innovative set design program.

What is TVS-1000?

TVS-1000 is a ready-to-use solution as a pre-configured turnkey workstation with software installed and input/output cards mounted. The system is offered in several variants. The most basic solution has a card with a single HDMI input and a single HDMI output.

The TVS-1000 start screen enables full control of the system, with fast access to the broadcast module or the virtual studio editor.

The quality of the results is principally down to our unique GPU-accelerated chromakey algorithm. This makes it possible to achieve very high quality keying.

The TVS-1000 software consists of three modules:

Main module

- **Production Live** – controls the broadcasting of a programme using a virtual studio and media (video clips, graphics etc).

Auxiliary modules

- **Still Text Edit** – Create graphics and subtitles for use during broadcast
- **Virtualset Maker** – for the creation and modification of virtual studio sets. Users can also go to the online virtual set store

System Control

- Configure the system.

How does a virtual studio work?

In theory there are no limitations in terms of the appearance and graphical contents of virtual sets. It is possible to create computer-generated digital sets that would be impossible or very costly to build in reality.

How to produce a programme in a virtual studio?

The following elements are necessary for the implementation of a virtual studio:

- A green or blue background with a suitable lighting set that will provide uniform lighting of the whole scene
- A camera
- Virtual set and keying software, such as the TVS-1000 system.

The video signal from the camera should be connected to the workstation input. The talent will now be presented against a green background in the program preview. The keying function places the talent against any virtual set generated by the TVS-1000 system. The simplest set is a still picture or a video backdrop, such as a panoramic view of a city. Using the foreground adjustment functions, it is possible to adjust the scale (size) and position of the talent so that they match the set used. The TVS-1000 system comes with twenty professionally prepared virtual sets for various themes, such as a news bulletins, a talk show, an educational programme, a programme for children, or a fantasy scene. Some of the elements of the ready-made virtual sets can be modified with the user's own graphics and displaying videos on virtual screens.

Users can swith between several different views / perspectives for each set. This enables a quick change of the studio, which gives the impression of viewing views from different cameras positioned in the studio. Additionally, a virtual camera can be used within the selected studio creating close-ups of a person or moving panoramas inside the studio when broadcasting a programme.

If users prefer a different set, they can visit the online virtual set store or create their own virtual studio set using the Virtualset Maker software.

Programme broadcast

A programme can be shared, distributed or transmitted live:

- The broadcast signal is output from the TVS-1000 card via either HDMI or SDI, depending on the version you have. The signal can be used as a broadcast contribution, ingested into a switcher or displayed directly on screens.
- The entire programme can also be saved as a file on the internal hard disk
- The broadcast can be streamed instantly to local viewers and remote audiences.

TVS-1000 Features

Signal Sources

The main module of TVS-1000, **Production Live,** enables users to ingest a live feed from a camcorder. Additionally, recorded files can be played by the system via virtual players.

Depending on your configuration, TVS-1000 makes it possible to operate on one or two sources (CAM1, CAM2). The CAM sources are taken live, e.g. from a camera connected to the input card. Other signal sources are played by virtual players. The players support the following sources:

- MEDIA1, MEDIA2 for videos
- STILL1, STILL2 for static graphics
- TEXT1, TEXT2 for text

TVS-1000 Preview Block

TVS-1000 offers the operator 14 previews at the same time. This allows for the efficient production of a live programme. Previews are be divided into three groups:

- Input signal previews
- Production previews
- Virtual studio take previews

Previews are generated in real-time. As a result, the operator has a full view of the live programme under way. All previews are displayed on the production application screen. Previews also can be displayed on up-to three external monitors.

Virtual Sets, a Complete Studio Definition

Virtual Sets contains studio sets, settings for the placement of the presenter, and virtual screens. Studio designs usually contain sets of several different views of the same studio. Loading different views to one of four TVS-1000's buffers offers the possibility of a quick change of the studio views. This makes it possible to create the impression that every take comes from a different camera in the studio. TVS-1000 comes with a set of 20 professionally prepared studios.

Studio Configuration

When preparing to broadcast, the virtual studio must be configured. The first configuration step is the choice of signals that will be used in the studio. After the signals are chosen, the presenter will be shown against the background of the studio set, and, for instance, a video will be shown on the virtual screens. If necessary, the presenter can be adjusted by correcting the scale (size) of the presenter against the studio background. The movements of a virtual camera can be defined on a studio view created in this manner. Three phases of camera motion can be defined for every studio. This allows the movement of the camera from one position to another. During the broadcast, the camera position can be switched 'sharp', without animation, or fluid, animated motions can be created with a specified duration.

Media Bins

A Media Bin is a simple-to-use interface that makes it possible to gather all the media necessary for programme in one place. The media can be transferred to virtual players, used on screen or as a source in virtual studios. TVS-1000 has six bins for different kinds of media which can include videos, still images, and text.

Production Switcher

The Production Switcher is the main element of TVS-1000. It plays the role of a vision mixer.

The Production Switcher panel consist of two rows of buttons. They are used for choosing the signal source and the execution button block. The top line of buttons, PGM, indicates from which source the image is directly broadcast. When broadcast source button is illuminated in red it is being used live on air. On the bottom line of buttons, PVW shows which source will be broadcast next. The selected button is illuminated in green, and the signal is seen in the preview window. TAKE is used to send the previewed content to broadcast. Pressing the TAKE button causes the immediate replacement of the PVW and PGM signals. The use of the button FSB causes the broadcast signal to gradually transition to black. Any transition time can be set.

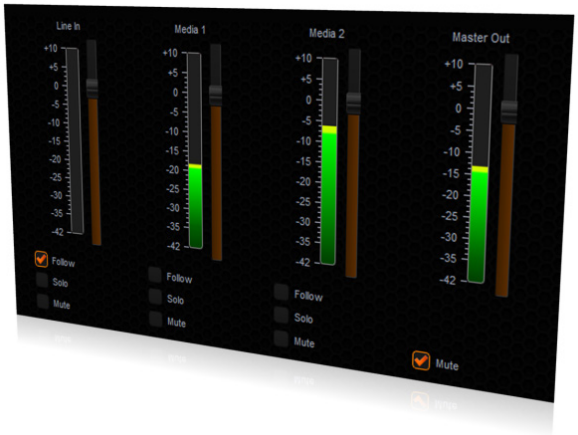
Downstream Key (DSK)

Graphics and text are overlaid on the main video. Such overlays are referred to as the downstream key (DSK). TVS-1000 makes it possible to add two DSK signals at the same time. Any virtual player can provide the DSK signal. This makes it possible to use any media available in the production application. Usually, the DSK layers include text, a still graphic, or animation. Standard video and graphic file formats should be used for such files. They must have a transparency definition, i.e. an alpha channel. TVS-1000 has its own text editor. It makes it possible to easily prepare subtitles for use in DSK layers.

Keying

Keying is used for camera inputs in TVS-1000. It removes areas with a specified colour (e.g. green) from an image. After switching on keying and defining its parameters, the green colour is removed. The presenter, shot on a green background, can be placed against the background of any virtual set.

TVS-1000 is equipped with an advanced chromakey algorithm which delivers superb keying for green and for blue backgrounds. The system also supports luma keying a special wizard that guides the user through setting process.



Sound Mixer

TVS-1000 is equipped with a sound mixer. The mixer supports sound sources from the input card and internal sources (MEDIA1, MEDIA2). It is possible to adjust the signal level of every source and separately adjust the input signal level. For any channel, it is possible to completely mute the signal (MUTE) or to play a single signal (SOLO).

Still Grab

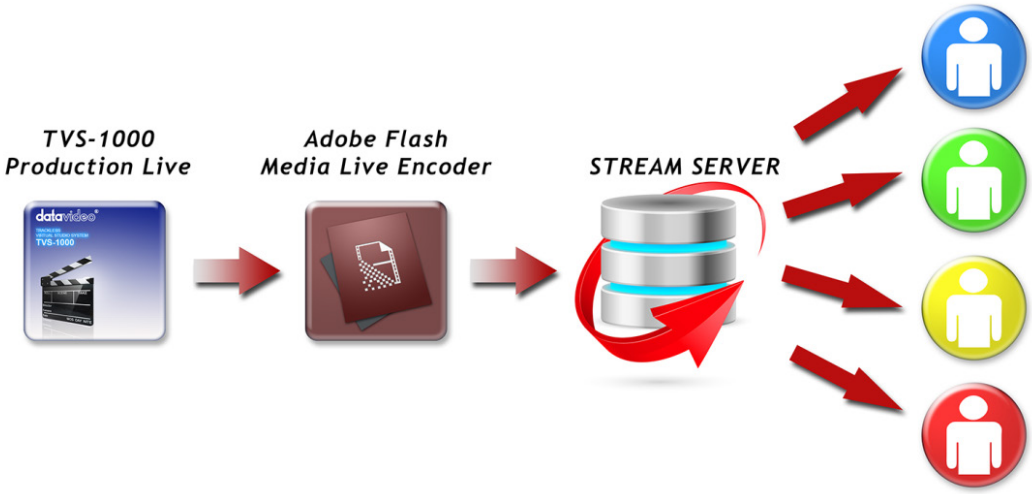
This function makes it possible to grab individual image frames with the possibility of saving them to files (PNG). Depending on the Production Switcher settings, it is possible to grab frames from a live broadcast programme or media feed. A shortcut to the file is added to the Media Magazine (STILL1 or STILL2). As a result, immediately after being grabbed, the frame is prepared for direct use on screen or as a source for the live programme being produced.

Capture

This function enables the use of TVS-1000 as a video recorder. The entire produced can be saved on the hard disk. The video is saved in the MP4 format using H.264 compression. The size of the file created can be adjusted by setting the compression ratio. Two sound coding methods are possible: AAC and MP3.

Stream

In addition to generating a broadcast signal, TVS-1000 can also output to a streaming server or CDN. The programme can then be viewed on any device with a web browser, such a computer or a tablet.



Still Text Edit

Text can be used during the programme broadcast, e.g. in DSK layers. A text file may include bitmaps created with any graphics program and text. Text created with the Still Text Edit module has a major advantage over graphics in other programs. It is possible to set all the most important elements for text: enter the text, set the font type, size, and attributes. Additionally, the scale and position of the text, the colour, the border, and shading can be set. The contents of the texts can be modified during a live broadcast. As a result, they can be used as templates in which new contents can be entered in a simple and fast way without changing the graphic elements (e.g. the background).

Virtualset Maker

Designing a studio set consists of importing and laying out graphics files. The files are placed in layers one above another, and their order 'on the stack' can be changed at will. The layers make it possible to input set files and place signal sources used in the studio design. New layers can be added, the order of layers can be changed, layers can be hidden or removed. Additionally, one can set the size and position of a layer on screen and rotate the layer by any angle. The finished composition can be saved in a special file format designed for virtual sets. A design becomes immediately available in the Production Live module.