DV Option

Thank you for upgrading to the DV option. Your **Casablanca Avio** has now been modified to allow for connecting DV equipment using the i.Link port.

Camcorders and video recorders (DV, Digital 8, DV Cam) with a digital interface (i.Link) can now be connected directly. i.Link is the term used for the digital connector standard when recording video and audio data. In some cases, other terms such as „Firewire" or „P1394" are also used. Quality shortcomings when recording material using the analogue video connectors are now history!

When recording to **Casablanca Avio**, the data is either converted to MPEG2 (digitally) or using the DV-Direct mode. Once edited, you can record your project back out onto a digital tape.

The result is an excellent picture quality: The video picture never undergoes an analogue/digital or digital/ analogue conversion.

You require a mini-DV camcorder and video recorder to take full advantage of the digital quality. You can use a camcorder capable of recording too! Some camcorders can be „unlocked" to allow for recording - ask your dealer!
Of course, you can also record from a DV camera onto **Casablanca Avio** and then output the project via YC or SCART to a VHS, SVHS or Hi8 recorder.
You can also connect analogue equipment such as VHS, SVHS or Hi8 with the CVBS and YC connectors.

The following functions and user options have been activated, now that your **Casablanca Avio** has been upgraded to DV.

–   manual automatic recorder control for DV camcorders or DV video recorders
–   direct digital transfer of data in the DV-direct mode
–   digital transfer in combination with analogue material in quality settings 1-6 [1]

Recording

The first change concerns the recording screen. The top row contains five buttons, to allow for controlling the DV unit via i.Link. We have tested a large amount of often used DV recorders and cameras , but you may encounter a recorder not entirely compatible with this system. If the DV control does not work right away, try re-starting the system.

From left to right, the functions of the buttons are: Pause the recorder, rewind the material on the DV tape, forewind, play and stop playing.

Both buttons for winding the tape have three separate functions: Fast fore- and rewinding, a slower fore- and rewinding with the picture being displayed and pressing the buttons whilst in „pause"-mode allows you to skip through the single picture frames on the tape.

Audio-recording /editing

In the audio record screen, the top right button now allows for choosing „DV". [2]
This makes it possible to record the original soundtrack using the DV port.

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[1] *At the time of printing (March 2001) this is only possible in quality settings 1 to 6. Quality setting 7 allows for recording DV material.*

[2] *At the time of printing, the audio input can not be set to DV.*

Finish

If you want to record your finished project to DV, press „**Record to DV**" (currently, this option appears only in the „DV-direct" mode). Now, the DV recorder panel appears. The buttons' functions are as follows (from the left to the right): Pause, rewind, forewind, record, play and stop. You do not have to press record on the recorder - you simply have to press the record button on the panel in the finish screen. [3]

When „**finishing**" to DV, **Casablanca Avio** renders the real-time effects while analogue „**finishing**" doesn't.

DV-direct

When recording in „**DV-mode**" (quality setting 7), **Casablanca Avio** no longer converts the digital video data into M-JPEG or MPEG2.

Video in its digital form requires a high amount of data. Uncompressed digital video would need some 26 MB a second, filling a 9 GB hard-disk in 5,7 minutes (if it was fast enough - and it isn't).

Video has to be compressed to reduce the data rates to a minimum. Currently, the compression methods are:

– DV (used in DV camcorders)
– M-PEG (comparable to the DV method - used in the classic Casablanca)
– Wavelet (barely used)
– MPEG2 (used in **Casablanca Avio** and **Kron** as well as in other modern video editing systems)

DV, M-JPEG and Wavelet are comparable (allow for app. 40 minutes in DV quality on a 9 GB hard-disk), whereas MPEG2 is about 3-4 times more effective (more than 120 minutes on a hard-disk).

When outputting via the DV port, the real time effects have to be re-rendered. Video material can be output to both DV and analogue equipment. [4]

The MPEG2 compression method

The classic **Casablanca** model and most PC cards make use of the Motion-JPEG compression technique. This technology offers a DV comparable picture quality at roughly 3.5 MB/Sec., making a 9 GB hard-disk capable of storing about 40 minutes of video.

Wavelet is another, not as common compression technology working with a similar effectiveness.

Both Motion JPEG and Wavelet compress each single video picture (50 pictures a second) independently. So far, this has been the only payable method of storing video digitally on hard-disk for editing.

MPEG2 on the other hand, compresses more effectively. This technology compares the single pictures with (e.g.) 20 neighbouring pictures and saves the changes in the video signal. For example: With a camera panning, the technique saves the information coming into the camera's view while with a stationary camera filming a football game, it saves the movements of the players. This method is very complex and has in the past therefore only been available for professionals. Advances in semi-conductor technology have made it possible to manufacture cheaper systems for end users.

MPEG2 is far more effective than Motion-JPEG - roughly 3 times more so. This low data rate is, in addition, a condition for real-time effects because current hard-disks are not capable of delivering 2 high quality Motion-JPEG / Wavelet picture-data streams reliably. This data rate is reduced with MPEG2 - even the IDE hard-disks used in the **Casablanca Avio** model can work seamlessly with 2 MPEG2 picture streams.

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[3] *At the time of printing, it is not possible to output an analogue project (settings 1-6) digitally.*

[4] *At the time of printing, recording of analogue material in a DV project is not possible.*

MPEG2 is also the method used by DVD video players and the new digital television. The DVD (Digital Versatile Disk) has been received extremely well by the press for its very high picture quality. **Casablanca Avio** allows a far higher data rate than DVD, leading to an even better picture quality than DVD's picture quality. Even the Avio model reaches broadcast picture quality.

Casablanca Avio's quality settings 1-6 utilize a full MPEG2 data stream as limiting to the technically more simple „I-frame-only" method.

With MPEG2, the real-time effects do not have to be rendered. You can record both analogue and DV material. [5]

[5] *At the time of printing, outputting MPEG2 material to DV is not possible.*

The following table summarizes the possibilities and uses of Casablanca Avio's varying quality settings.

	Quality1-6 MPEG-II	Quality 7 DV-direct
Recording via DV	Yes	Yes
Recording analogue signal	Yes	Yes [1]
Outputting to DV	Yes [1]	Yes
Outputting analogue signal	Yes	Yes
Realtime effects must be rendered when outputting analogue signal	No	No
Realtime effects must be rendered when outputting to DV	Yes [1]	Yes
DV-control	Yes	Yes

[1]) At the time of printing (March 2001) not yet possible