CockpitCUBE® Esentials & DualCamera Module

Suggested hardware setup.

VideoAssisTech

SOFTWARE SOLUTIONS FOR MOTION PICTURE

Introduction

CockpitCUBE® is capable of controlling some DV device and not others; this is due mainly to the fact that not all DV devices can actually be controlled the way it's useful for a Video Assist job. Because you will be using the same bidirectional DV converter box for both input and output for the same camera, you'll have to switch the DV device from "input mode" to "output mode" when you want to display the recorded images onto an external monitor (two DV converter boxes will be used per each camera for independent I/O in conjunction with the RT&L module, when available). DV cameras can do that, for example, switching from "Camera" to "VTR" mode and also some DV converter box can, but most of them will require the manual intervention of the user. **Canopus®** DV converter boxes **ADVC-110** and **ADVC-300** and **Miranda® DV Bridge Pro**, on the other hand, are the only DV devices (as far as we know in January 2008) that can be switched between input and output mode via software, without manual user intervention. We strongly suggest you use such devices for your I/O operations, otherwise the usability of CockpitCUBE® will be strongly reduced. From now on we will assume you are using one of the suggested DV converter boxes.

Suggested hardware setup.

Scenario A) : Laptop installation.

You need a modern laptop computer with Intel Centrino Core 2 Duo CPU with 2 or, better, 4 MB of cache, 1GB of RAM, 300MB of free hard disk space, a 15" or 17" 16:10 screen with a suggested minimum resolution of 1440x900 or higher (in any case not minor than 1280x800), an embedded IEEE1394a FireWire 400 controller (usually a laptop comes equipped with one or, in rare cases two, 4 pin FireWire 400 ports), an additional IEEE1394a FireWire 400 controller (usually equipped with one or usually two 6 pin FireWire 400 ports) either as PCMCIA or Express card, 2 Canopus® DV converter boxes model ADVC-110 or ADV-300 or a combination of the two, 2 FireWire cables (usually one 6 to 4 pin and the other 6 to 6 pin) , an external High Speed USB 2.0/FireWire/e-SATA hard drive for video recordings (the so called Media Drive) with proper High Speed USB 2.0 shielded cable, two approved power supplies for the converter boxes and one for the external hard drive (usually laptops don't provide energy thru USB and FireWire busses to power up such peripherals). Note: e-SATA connection is preferable over USB 2.0 to connect external hard-drives, but it is not yet widespread on laptops.

Scenario B) : Desktop installation.

Use a desktop computer with the same specifications of the laptop as far as the CPU, RAM, HDD space, screen size, DV converter boxes and cables are concerned. What changes is: the primary FireWire controller may or may not be embedded in the main board, so you may have to install not just one but maybe 2 additional PCI or PCI-X (PCI express) IEEE1394a FireWire 400 controller cards. Usually such cards come equipped with 6 pin FireWire 400 connectors so they can provide power to the DV converter boxes thru the FireWire bus if you use 6 to 6 pin FireWire cables. From this follows the ability to avoid of separate power supplies for the converter boxes. Another difference is the ability to connect very fast 3Gbps internal S-ATA hard drives, instead of the external USB 2.0 ones, powered from the same power supply that powers-up the computer. Such drives can be mounted into removable hard drive enclosures allowing for easy swapping when needed. Multiple hard drives can be used together to improve performances (RAID level 0)

or data reliability (RAID level 1 or 5 for example), a much more difficult task to achieve on laptops. Many modern main boards include a e-SATA connection as well for external e-SATA drives.

Note for Mac users:

You may have to disable the 1394 Network Adapters in order to properly control the ADVC devices when running Windows XP on a Mac hardware using Bootcamp.
To do so go in "Start -> Control Panel -> (Performance and Maintenance ->) System -> Hardware -> Device Manager -> Network Adapters", then "Right-click-> Disable" each of the "1394 Network Adapters" listed.

Setting up Canopus® DV converters.

With the unit powered down, set the Mode Switch Selector of your Canopus® ADVC-110 to match the video input format. Make sure to set the unit to power-on in analog input mode. Leave all other dip switches set to factory default (all OFF). Please note the Canopus® ADVC-300 DV converter box has a number of very interesting features, like an integrated TBC (Time-Base Corrector) that makes for faster switching between ON-LINE and OFF-LINE modes (analog and digital input) and it comes with a software application that allows to tweak the TBC settings from the computer. Full exploitation of this device needs more testing. Please report to us you experience with it.

Powering up Canopus® DV converters.

Do not connect the DV converter boxes to the computer yet. First power up the Canopus® DV converter boxes that require external power supply. As said, if you are using a laptop you won't be able to power up the Canopus® DV converter box from the embedded 4 pin FireWire port(s); some of the additional FireWire cards (PCMCIA or Express-card) available on the market will provide you with a power input socket to power up the Canopus® DV converter box from the bus as well using a PSU connected to the FireWire card itself. If you are using a desktop PC, instead, you are likely to be able to power up the Canopus® DV converter boxes from the FireWire bus itself without the need of external PSU. In any case, by using a 6 to 4 pin FireWire cable or a 4 pin FireWire port (there is one on the converter box itself), it's not possible to power up the Canopus® DV converter box from the FireWire bus because the power lines are missing at the 4 pin end.

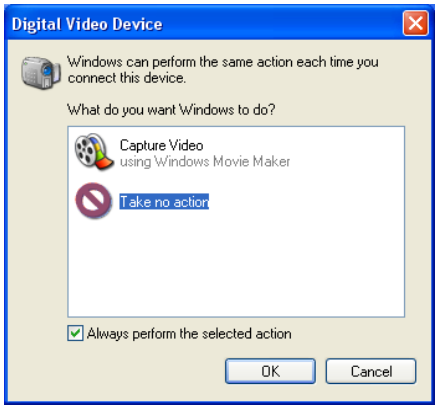
Connecting Canopus® DV converters.

Power up the computer. When the operating system has finished loading-up, connect each Canopus® DV converter box to its own FireWire controller one at a time using quality FireWire cables.

Important: connect only 1 Canopus® DV converter box to each FireWire controller even if the FireWire controller itself may have more than one port. Do not connect any other FireWire device (for example an hard drive) to the same FireWire controller used by the Canopus® DV converter box. FYI: under certain circumstances and with some DV camera model it is actually possible to connect up to 2 DV cameras to the same controller; this is not true for the Canopus® DV converter boxes or a combination of cameras and converters. Do not daisy chain multiple Canopus® DV converter boxes either.

The operating system will take some time to acknowledge the new peripherals and may prompt you to automatically install the required drivers. As usual we suggest you make sure your operating system and all the drivers are up-to-date. The first time you connect a DV device, Windows will perform the installation of the required software drivers. This will happen only the first time you connect a new DV device to the computer. Then every time you'll connect the same device to the same computer Windows will recognize it automatically because Windows will save the unique serial number associated to each DV device so it remembers and enumerates each DV device you ever connected to your computer. Most DV devices are "plug-n-play" and Canopus® ones are part of this category. This means they do not need any user intervention when plugged-in for the first time or any following time. Then, every time you connect a DV device to your computer, Windows will ask you what to do with it.

We suggest you select "**Take No Action**" and tick "**Always perform the selected action**" to avoid being bothered every time you plug-in the DV device.



For troubleshooting and more information about the Canopus® DV converter boxes, please refer to their installation and user manual.

Setting up your I/O channels.

Taking advantage of the switching capabilities of the Canopus® DV converter boxes and the ability of assigning them to the camera of your choice from inside the program, you may avoid using an external routing switcher at least upstream the boxes themselves.

First thing we suggest is that you label the Canopus® DV converter boxes so you can make a clear distinction between them, let's say "A" CAMERA and "B" CAMERA. Then connect the composite video output of each camera, video assist or downconverter to the VIDEO IN front yellow RCA connector. Connect the audio (coming probably from the same source and in mono) to both converter boxes using a splitter. Later we'll add the functionality to distribute the single input audio source among all cameras via software. Connect each director's monitors to each converter box video output maintaining the proper relationship with the source camera. So "A" CAMERA video output goes into "A" CAMERA DV converter box and then to "A" CAMERA director's monitor. Please note that using 1 DV converter box as single I/O device per camera does not allow for controlling or muting the audio levels on the director's speakers when in LIVE or in RECORDING (the audio and the video signals are streaming thru the box like in E-E mode) so you need a way of manually controlling the volume downstream the DV converter boxes. Such rig will also come practical during playback because it's not yet possible to control the volume of the playback in ON-LINE mode from within the software. While the latter will be solved soon via free update, the former requires

the availability of the RealTime&Live Upgrade module - available at a later stage of development - that will make use of 2 DV converter boxes per each camera to stream the LIVE A/V channel thru the computer before sending it back out to the director allowing for LIVE processing of both audio and video. You may do some test using the S-video output of the graphic card (most laptop do and most desktop VGA card have the option) coupled with the computer speaker's output to output a fully controlled A/V stream to the director. The downside of such method is the perceivable delay between LIVE action and the image on the monitor and the fact that this solution will work only for one camera at a time and not for two or more (only 1 video renderer is managed by the VGA card as video overlay at any given time – only one A/V output from the computer).

Launching CockpitCUBE®.

Now you can launch the CockpitCUBE® software by double clicking on the desktop icon; make sure you have the Security Dongle connected to a USB port. The very first time you run the application, it will take some time because it needs to create the configuration databases. This extra-long delay will happen only the first time you run the application after the first installation; every time you launch the application after a computer reboot, you may also experience some minor delay due to the starting-up of required SQL services in background. For additional information on how to start a project, please refer to the CockpitCUBE® Essentials Quick Start Guide.

Once CockpitCUBE® has started, create your project then go to the configuration page. Here note that you can name each camera as you prefer, so, to keep it straight, let's call Camera 1 "A" CAMERA and Camera 2 "B" CAMERA. Now look at the FireWire Device List. The software has listed all connected DV devices and has assigned a default name to each of them, followed by a sequential ID. If a connected and powered-up converter doesn't show up here, click the "Refresh" button; if it still fails to be listed disconnect and reconnect the device, then refresh.

Let's assume you never connected any other DV device to the system beside the two we are considering here. So one device will be called something like Microsoft DV Camera and VCR #1 and the other Microsoft DV Camera and VCR #2. We don't know yet if the box labeled "A" CAMERA corresponds to the Microsoft DV Camera and VCR #1 or vice versa. Now go in DDR 1 configuration page and assign the Microsoft DV Camera and VCR #1 to it. Swap to Main tab page and see if the image you see in the "A" CAMERA video window correspond to the "A" CAMERA source. If it does, go back to the Configuration page and rename the Microsoft DV Camera and VCR #1 device, for example, as "A" CAMERA DV BOX and the other one as "B" CAMERA DV BOX. Don't forget to assign the latest to DDR 2 as well. If it does not correspond, go back to the Configuration page, rescan the FireWire Device List, rename the Microsoft DV Camera and VCR #1 device as "B" CAMERA DV BOX and the other one (#2) as "A" CAMERA DV BOX. Then go to DDR 1 and DDR 2 configuration pages and assign the proper DV to the appropriate camera. The software will remember the name of each box, so you don't have to pay attention to which FireWire controller you connect your DV converter box and also if you swap the cabling (both input and output) you simply have to rescan the FireWire Device List and swap DV device assignment. There is nothing we can do if you swap only the input or output cabling because then you'll have a source/monitor mismatch.

Same thing can be done for the Media Drives: for example you may use 2 media drives, one only for "A" CAMERA and the other only for "B" CAMERA; place a label on you media drives, rename them after the label and assign each media drive to the proper camera.