



PCI Video Board

# Centaurus

Installation Guide



# Centaurus Installation Guide

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**Introduction**

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**Overview**

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**Installation**

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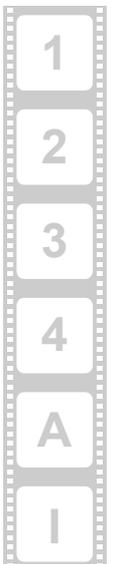
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## Installation Guide Version 1.0 for Centaurus Version 1.0

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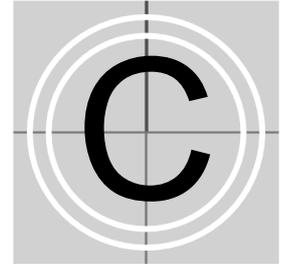
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Vendor:	_____		
<b>Centaurus</b>			
Serial No.:	_____		
Remarks:	_____ _____		
<b>Computer</b>			
Brand:	_____	Type:	_____
Operating System:	_____	Version:	_____
<b>Connected devices</b> (Brand and type of edit controller, VTR, color grading system, etc.)			
_____			
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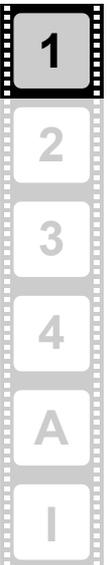
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# Introduction



This documentation describes Centaurus, the ultimate DVS product for OEM customers. It is centered around the Iris board, a half-length PCI-X bus single board for real-time input and output of uncompressed HDTV, SDTV and AES/EBU audio signals. Combining proven technologies from former OEM boards, Centaurus offers developers even more flexibility, power and reliability. Based on PCI-X bus architecture, Centaurus supports all video formats from standard definition, PAL and NTSC, through high definition to full 2K film resolution. Using the software development kit (SDK), which is compatible to DVS' former OEM products, you can build powerful HDTV and SDTV solutions, for example, for editing, compositing, virtual studio or titling with Centaurus.



## 1.1 Overview

This guide informs you about the installation of Centaurus as well as all connection possibilities. Furthermore, it provides information about the setting of license keys and the testing of the installation.

The chapters contain the following information:

Chapter 1	Begins with a short introduction to Centaurus, followed by a note regarding the audience this manual is written for and an explanation of the conventions used in this manual. Beside the system requirements necessary to run Centaurus, it provides safety instructions that you must adhere to and some important notes that you should read.
Chapter 2	Provides an overview of Centaurus detailing all connectors and interfaces of the Iris board and its additional panels.
Chapter 3	Describes the installation of Centaurus. First the hardware installation is explained, followed by a description of the software installation.
Chapter 4	Details maintenance work in case of a PCI upgrade failure.
Appendix	Provides technical details and general information about Centaurus.
Index	This chapter facilitates the search for specific terms.

## 1.2 Target Group

To use this manual you should have experience in computer software handling and be familiar with the hardware structure and interior of a computer system.

## 1.3 Conventions Used in this User Guide

The following typographical conventions will be used in this documentation:

- Texts preceded by this symbol are parts of a list.
- Texts preceded by this symbol describe activities that you must perform in the order indicated.



Texts preceded by this symbol are general notes intended to facilitate work and help avoid errors.



You must pay particular attention to text that follows this symbol to avoid errors and possible resulting damages thereof.



Texts following this symbol you must pay particular attention to to avoid dangers and personal injuries.

“ ” Texts enclosed by quotation marks are references to other manuals, guides, chapters, or sections.

<b>'Window'</b>	Window name
<b><i>Menu</i></b>	Menu name and options in a menu list
<b>BUTTON</b>	Push buttons
<i>File</i>	Directory structure or file
<b>Command</b>	Command, for example, at a prompt; a bold typeface indicates that this has to be typed in exactly as written
Command	A regular typeface of a command indicates optional parameters, variables, etc.



## 1.4 Safety Instructions

To use Centaurus correctly please heed the following:



Please read the following safety instructions very carefully before attempting any installation and/or performing any work on Centaurus.

If Centaurus is not used in compliance with the safety instructions, the warranty and all resulting liability claims will be void.

### General

Centaurus has been built according to the applying safety regulations. To minimize the possibility of a faulty operation of the device all manuals and guides must be available at all times at the operation site. Before installing and/or using Centaurus the manuals and guides delivered with Centaurus must be read and observed.

- Use Centaurus only in apparent good technical order.
- The system you are trying to connect Centaurus to usually works with voltages that can be hazardous to your health. Never access its interior with the power cable(s) being plugged in. Make sure the power supply is disconnected from the components you are working on before opening its casing.
- Computer hardware contains components that are sensitive to electrostatic discharge. If you touch them without precautionary measures, they can be destroyed. Use a wrist strap connected to ground when accessing electronic parts and take care of grounding the video system. Avoid touching the components of the computer system and Centaurus whenever possible.
- Computer hardware contains components that are very sensitive to changing voltages. Connecting or disconnecting Centaurus to or from peripheral hardware while any of them is switched on may damage the hardware. Switch off all peripheral hardware before connecting or disconnecting anything.
- Use the board only in compliance with the technical data laid out in section “Technical Data” on page A-1.
- Centaurus may not be misused, abused, physically damaged, neglected, exposed to fire, water or excessive changes in climate or temperature, or operated outside maximum rating.
- Do not perform any changes or extensions to Centaurus whatsoever.

## Environmental Conditions

For error-free working and an average service life, Centaurus needs some basic environmental conditions:

- Do not expose Centaurus to sources of heat, such as direct sunlight or a radiator.
- Avoid areas with high humidity or dust. Best operating conditions are given in an air-conditioned site.
- Do not expose Centaurus to strong electric or magnetic fields.
- Avoid areas where Centaurus will be subject to vibrations or shocks.

## 1.5 Important Notes

The following provides information about warranty, an important note if you want to unplug cables, and some additional information about optionally available breakout boxes.

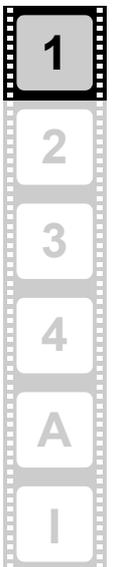
### Warranty Information

This product is warranted to be free of defects in materials and workmanship for a period of one year from the date of purchase. DVS extends this Limited Warranty to the original purchaser.

In the event of a defect or failure to confirm to this Limited Warranty, DVS will repair or replace the product without charge. In order to make a claim under this Limited Warranty, the purchaser must notify DVS or their representative in writing of the product failure. In this Limited Warranty the customer must upon DVS' request, return the product to the place of purchase or send the defective device to a given address for the necessary repairs to be performed. If the customer is not satisfied with the repair, DVS will have the option to either attempt a further repair, exchange the product, or refund the purchase price.

This warranty does not cover:

- Products not developed by DVS GmbH.
- Products which have been subject to misuse, abuse, accident, physical damage, neglect, exposure to fire, water or excessive changes in the climate or temperature, or operation outside maximum rating.
- Products on which warranty stickers or product serial numbers have been removed, altered or rendered illegible.
- The cost of installations, removal, transportation, or reinstallation.
- Costs for transportation damages.
- Damages caused to any other products.



## Unplugging Cables

If you want to unplug one of the flat cables after its installation on the board, please observe the following:

Flat cable connectors are equipped with a locking mechanism to prevent them from becoming disconnected after they were plugged in.



Don't use any force to disconnect flat cable plugs, otherwise the socket on the board may be damaged or even break off.

To unplug the connector use your index finger and thumb to press the locking wings together.

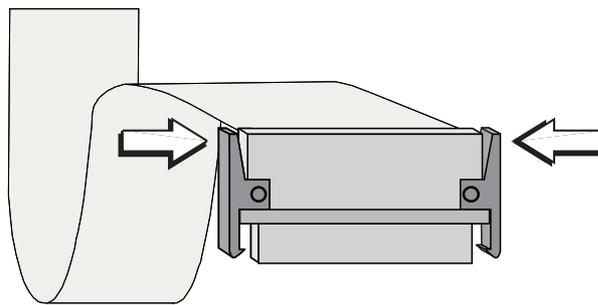


Figure 1-1: Unplugging flat cables

Then you can easily remove the connector.

## Breakout Box

A modular breakout box is optionally available for Centaurus to replace the breakout cables and reduce the amount of panels. To connect to the breakout box a different slot panel will be included in its delivery which will replace all additional slot panels described in this manual (see section "Overview of Panels" on page 2-7).

For more information about the different types of breakout boxes available for Centaurus please contact your local vendor or DVS directly.

## 1.6 System Requirements

### Required Hardware

These are the minimum hardware requirements that the computer system has to meet if you want to use Centaurus.

- Pentium 4 or similar with at least 1.8 GHz
- Mainboard with 64-bit, 66/100-MHz PCI-X bus



Ex factory the board is set to operate with 66 MHz.



The Iris board will not work when plugged in a PCI-X bus set to 133 MHz. However, it can be plugged in a 133 MHz capable bus if this is set to operate, for example, with 100 MHz. In this case the PCI-X bus has to be set to 100 MHz in the Bios of the computer system and the respective DIP switch on the Iris board to the correct clock frequency.

- 1 free slot in a bus-master capable PCI segment that supports PCI-X
- 512 MB RAM

### Supported Operating Systems

Centaurus can be used with the following operating systems:

- Windows 2000 and XP
- Linux (Red Hat and SuSE)
- IRIX



Be sure that you have installed the newest Service Packs for your system, otherwise you may encounter soft- and/or hardware problems.

### Required Software

Centaurus needs the DVS driver. Furthermore, to be programmed for applications the SDK by DVS is necessary. Both software should be included in your delivery.





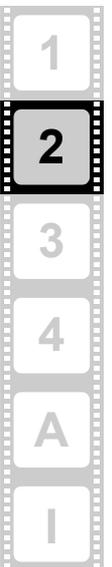
## Overview



This chapter shows an overview of Centaurus. It details all connectors and interfaces of the board and its additional panels. First an overview of the Iris board is provided, followed by an overview of the optional module necessary for some of the features available for Centaurus. After that a detailed overview of the delivered slot panels will be given.



Please note that some of the panels may not be included in your Centaurus configuration. They belong to optional features of Centaurus and are only necessary if you ordered the respective feature. A listing of the optional features as well as of the panels that are delivered with this feature can be found in the “Scope of Delivery” which has been delivered with Centaurus on an extra sheet of paper.



## 2.1 Overview of the Board

This section provides an overview of the video I/O board delivered with Centaurus. The PCI video board of Centaurus is a complex piece of hardware. Depending on the overall configuration it may be equipped with connectors on two circuit board levels. First, an overview of the connectors on the base circuit board (the Iris board) will be given, followed by an overview of the connectors implemented on the second level circuit board, the IM (Iris module) circuit board. The IM board is necessary for some of the optionally available features of Centaurus and will be mounted directly on the Iris board.

### 2.1.1 Iris Board Layout

The Centaurus hardware is a complex piece of technology. The following provides an overview of the PCI video board, the Iris board. You can find descriptions of all items necessary for an operation of the board here.

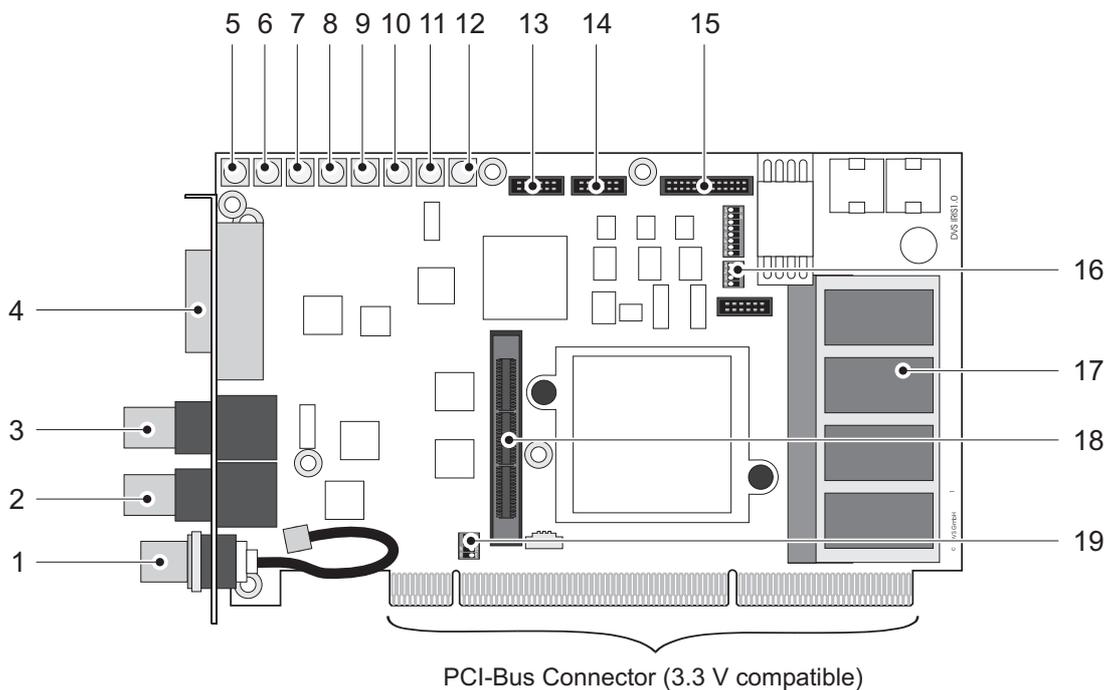
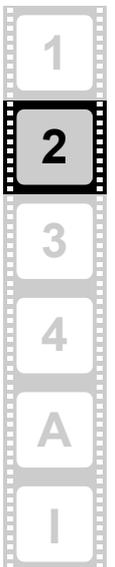


Figure 2-1: Overview of the items and connectors on the Iris board

No.	Item	Explanation
1	REF IN	Reference input
2	(HD) SDI OUT A	BNC connector for YUV or RGB output (serial digital interface)
3	(HD) SDI IN A	BNC connector for YUV or RGB input (serial digital interface)
4	DVI OUT	Output of analog and digital video signals
5	H Sync OUT	MCX connector for output of video synchronization signal (horizontal sync)
6	V Sync OUT	MCX connector for output of video synchronization signal (vertical sync)
7	CVBS OUT	MCX connector for composite video burst signal: either analog output of SD video or used for synchronization of R OUT, G OUT and B OUT
8	R OUT	MCX connector for analog SD video signal output of Red
9	G OUT	MCX connector for analog SD video signal output of Green
10	B OUT	MCX connector for analog SD video signal output of Blue
11	SD IN	MCX connector for input of digital SD video signals
12	SD OUT	MCX connector for output of digital SD video signals
13	GPI	Flat cable connector for general purpose interface
14	RS-422	Flat cable connector for in- and output of RS-422 signals
15	AUDIO/LTC	Flat cable connector for audio and LTC interface
16	DIP Switch for Flash Controller	<p>This switch controls the operation of the on-board Flash controller. It defines the version set of the map file that should be loaded at startup.</p> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>Default setting of the DIP switch for the Flash controller.</p> </div> </div>



No.	Item	Explanation
17	Memory	256 MB RAM memory module
18	Expansion slot	Mictor connector to connect the IM circuit board to the Iris board
19	DIP Switch for PCI	DIP switch to setup the PCI board interface, for example, the clock frequency
		 <span data-bbox="975 607 1262 640">PCI-X 100/133 MHz</span>
		 <span data-bbox="975 710 1299 781">PCI-X 66 MHz (factory setting)</span>
	The Iris board needs a PCI-X interface that works with either 66 or 100 MHz. All other PCI types and clock frequencies are currently not supported.	



All other switches and connectors available on the Iris board are used during the manufacturing process only and are without function in normal operation mode.

### 2.1.2 Overview of the IM Board

The following figure shows the connectors present on the second level circuit board of the Iris board, i.e. on the IM (Iris module) circuit board. The IM board is necessary for some of the optionally available features of Centaurus, such as HDTV dual link and key channel, and is mounted directly on the Iris board when you have ordered these features:



An upgrade from Centaurus equipped with single-link HDTV only to a dual-link version is possible without exchanging the hardware. You will then be provided with the IM board which has to be mounted on the Iris board.

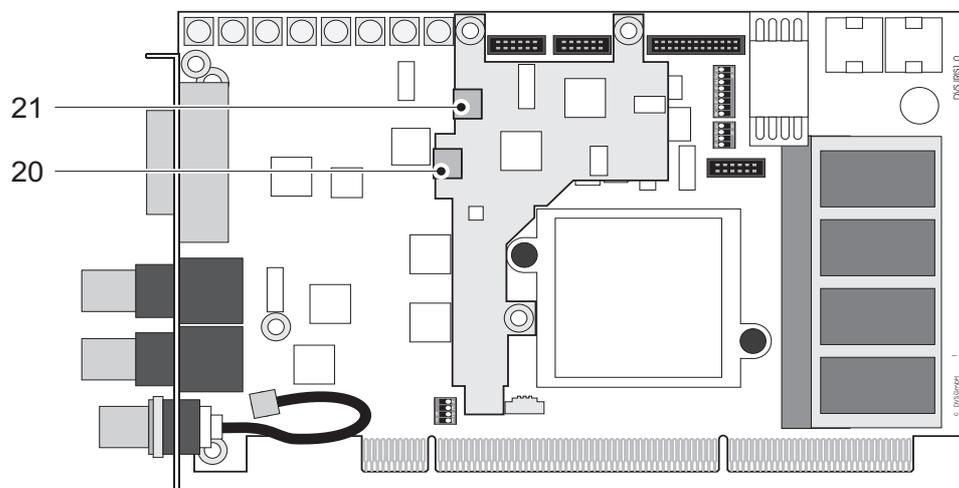


Figure 2-2: Overview of the connectors on the IM board

No.	Item	Explanation
20	(HD) SDI OUT B	MCX connector for key and/or RGB output in dual-link mode (serial digital interface)
21	(HD) SDI IN B	MCX connector for key and/or RGB input in dual-link mode (serial digital interface)



### 2.1.3 Digital Video I/O

DVS named the external connectors for the in- and output of the digital video signals alphabetically. For YUV you will usually use one channel (connectors labeled 'A', single link). For YUVA you will need two channels ('A' for YUV and 'B' for the key signal). With RGB you will always need two channels ('A' and 'B', dual link). The same applies to transmitting rasters of a higher resolution.

The Iris board provides two in- and output ports, ports A and B:

- In its HDTV single-link version the A ports are used for single-link YUV or the first part of the RGB SD signal in dual link. The B ports provide for SDTV either the key channel or the second part of RGB.
- In its HDTV dual-link version the A ports are used for single-link YUV or the first part of the RGB signal in dual link. Ports B are used for key in YUVA mode or the other part of the RGB signal as well as the key signal in dual-link mode.

The table below shows how the signals are distributed over the I/O ports in different color modes.

Video Mode	Input, Port A	Input, Port B	Output, Port A	Output, Port B
YCbCr 4:2:2	Y, C <sub>b</sub> , C <sub>r</sub>	–	Y, C <sub>b</sub> , C <sub>r</sub>	–
YCbCrA 4:2:2:4	Y, C <sub>b</sub> , C <sub>r</sub>	A	Y, C <sub>b</sub> , C <sub>r</sub>	A
RGB 4:4:4	G, ½ R, ½ B	½ R, ½ B	G, ½ R, ½ B	½ R, ½ B
RGBA 4:4:4:4	G, ½ R, ½ B	½ R, ½ B, A	G, ½ R, ½ B	½ R, ½ B, A

## 2.2 Overview of Panels

To provide all the connection possibilities for the various features of Centaurus at a computer casing, several panels are delivered with the individual board. This section provides an overview of the different panels.



Please note that some of the panels may not be included in your Centaurus configuration. They belong to optional features of Centaurus and are only necessary if you ordered the respective feature. A listing of the optional features as well as of the panels that are delivered with this feature can be found in the “Scope of Delivery” which has been delivered with Centaurus on an extra sheet of paper.

A modular breakout box is optionally available for Centaurus which will replace all additional slot panels described in this section. Further information about the breakout box can be found in section “Breakout Box” on page 1-6.



## 2.2.1 SDI and RS-422 Panel

The SDI and RS-422 panel is included in the basic configuration of Centaurus. It provides the connectors for the second link of dual-link connections.

Additionally, a CVBS output is installed on this panel. It will provide a composite video signal once the board is switched to the SDTV mode.

The RS-422 connector available on the panel is a DB-15 (HD) connector. It can be equipped with a breakout cable that will then provide two female DB-9 connectors for a standard RS-422 connection (see figure 2-4 on page 2-9). The breakout cable is included in the delivery of Centaurus. The two ports can be switched between master and slave mode. Pin-outs of the DB-15 (HD) connector on the slot panel and the DB-9 connectors available via the breakout cable can be found in section “Signal In- and Outputs” on page A-6.

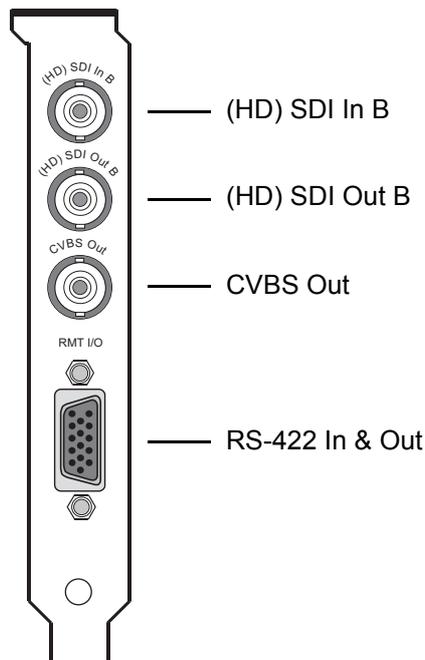
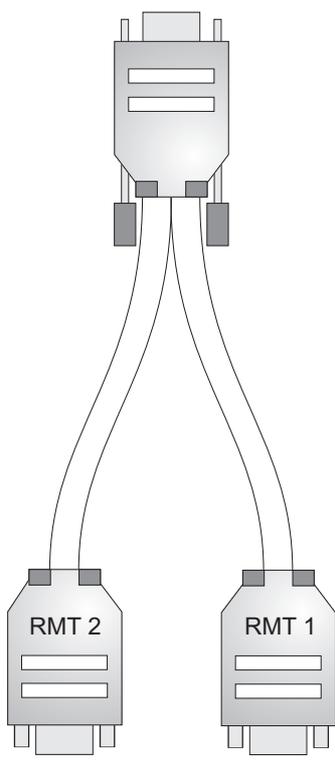


Figure 2-3: Panel with SDI and remote control connections

Item	Explanation
(HD) SDI In B	BNC connector for key and/or RGB input in dual-link mode (serial digital interface)
(HD) SDI OUT B	BNC connector for key and/or RGB output in dual-link mode (serial digital interface)

Item	Explanation
CVBS Out	BNC connector for composite video burst signal: either analog output of SD video or used for synchronization of R OUT, G OUT and B OUT
RS-422 In & Out	<p>DB-15 (HD) connector (male), serial RS-422 interface for master/slave control, a breakout cable to two DB-9 connectors is included in delivery:</p>  <p style="text-align: center;"><i>Figure 2-4: RS-422 breakout cable</i></p>



## 2.2.2 Audio Panel

The audio panel is available as an optional feature. An analog stereo headphone output and a DB-25 connector for digital audio (AES/EBU) and LTC signals are provided at this slot panel.

To the DB-25 connector you can either connect a breakout cable providing eight XLR connectors to interface directly with audio devices, or you can connect a half-19" audio breakout box which is optionally available. This will then provide the necessary connections in one place. Further information about the breakout box can be found in section "Breakout Box" on page 1-6. A pin-out of the DB-25 connector can be found in section "Signal In- and Outputs" on page A-6.

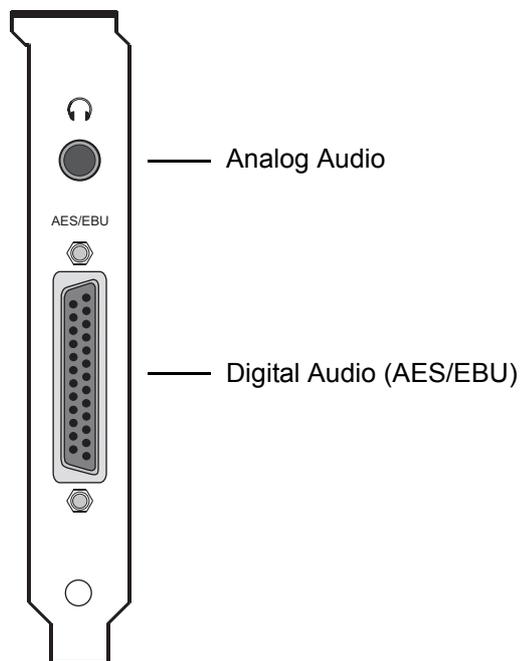


Figure 2-5: Panel for analog and digital audio

Item	Explanation
Analog Audio	3.5 mm unsymmetrical stereo jack headphone output to monitor the audio output
Digital Audio (AES/EBU)	DB-25 connector (female) for audio signal in- and output of channels 1 to 8



Prior to the installation of the audio panel you have to set the jumpers on the printed board to their desired settings: you can choose between four digital stereo channels or three digital stereo channels and one LTC in- and output. This is described in detail in section “Jumper Settings of the Audio Panel” on page 3-3.



### 2.2.3 GPI and Wordclock Panel

The GPI and audio wordclock panel is optionally available and provides the general purpose interface and the audio wordclock output.

The GPI port could be used for all kinds of triggers that have to be send to your audio/video system. The provided plug is a DB-9 male connector. A pin-out of this connector can be found in section “Signal In- and Outputs” on page A-6.

A clock frequency according to the currently adjusted audio mode will be supplied by the wordclock output to synchronize to external video equipment.

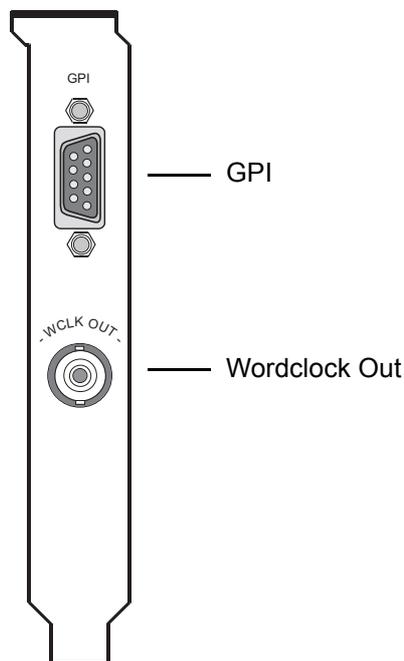


Figure 2-6: Panel for GPI and wordclock

Item	Explanation
GPI	DB-9 connector (male), general purpose interface
Wordclock Out	BNC connector providing a wordclock signal for the synchronization of an external audio device



Prior to the installation of the GPI and audio wordclock panel you have to check the jumpers on the printed board of the GPI for their correct settings. This is described in detail in section “Jumper Settings of the GPI and Wordclock Panel” on page 3-3.

# Installation



This chapter details all the information necessary to install Centaurus into a computer system.

First, the installation of the board itself is described. After that follows a description on how to activate the ordered features. Centaurus offers a lot of features to the user. Some of these features are included in the standard version of Centaurus, some of these belong to optional packages and have to be ordered explicitly if you want to use them. Via a license key the whole feature set that you have ordered with Centaurus can be activated.

For some installations it may be necessary to upgrade the PCI interface (firmware) of Centaurus. This is described in this chapter as well.

Once everything is set, you may test your installation and system configuration if everything is working properly.



The DVS driver to control the board is part of the SDK software package. For information on how to install the DVS driver, please refer to the SDK manual.



## 3.1 Hardware Installation

How to install Centaurus in a computer system is described in this section. The installation has to be performed in four steps: First, you have to prepare the computer system and the panels as well as set up the clock frequency that the board shall use. After that the board itself must be installed. This is followed by the installation of the different panels. As the fourth and last step the installation has to be finished.



If you want to disconnect the flat cables from the board once they are plugged in, please read section “Unplugging Cables” on page 1-6.

### 3.1.1 Preparations

Before installing the Iris board the computer system and some of the panels have to be prepared for the installation. Furthermore, the desired clock frequency for the board has to be selected. All these preparations will be described in the following.

#### Preparing the Computer System

To prepare the computer system where Centaurus has to be installed perform the following:

- Disconnect all cables (especially the power cords) from the computer system where Centaurus is to be installed.



The computer system you are trying to connect Centaurus to usually works with voltages that can be hazardous to your health.

Never access its interior with the power cable(s) being plugged in. Make sure the power supply is disconnected from the components you are working on before opening its casing.

- Open the computer casing.



For details on how to do this, please refer to the respective manufacturer’s manual.



Computer hardware contains components that are sensitive to electrostatic discharge. If you touch them without precautionary measures, they can be destroyed.

Use a wrist strap connected to ground when accessing electronic parts. Avoid touching the components of the computer and the Iris board whenever possible.

The computer system is now ready for the installation of the Iris board and you have to proceed now with the checking of the panels, i.e. checking the audio and the GPI and wordclock panel for their correct jumper settings.

### Jumper Settings of the Audio Panel

Up to four stereo channels of AES/EBU or three stereo channels of AES/EBU and one LTC in- and output can be transmitted over the DB-25 connector that is available on the audio panel. This signal configuration has to be configured via jumper settings on the printed board mounted to the audio slot panel.

- Before installing the audio panel, please check whether the jumpers on the printed board are set to your desired configuration:

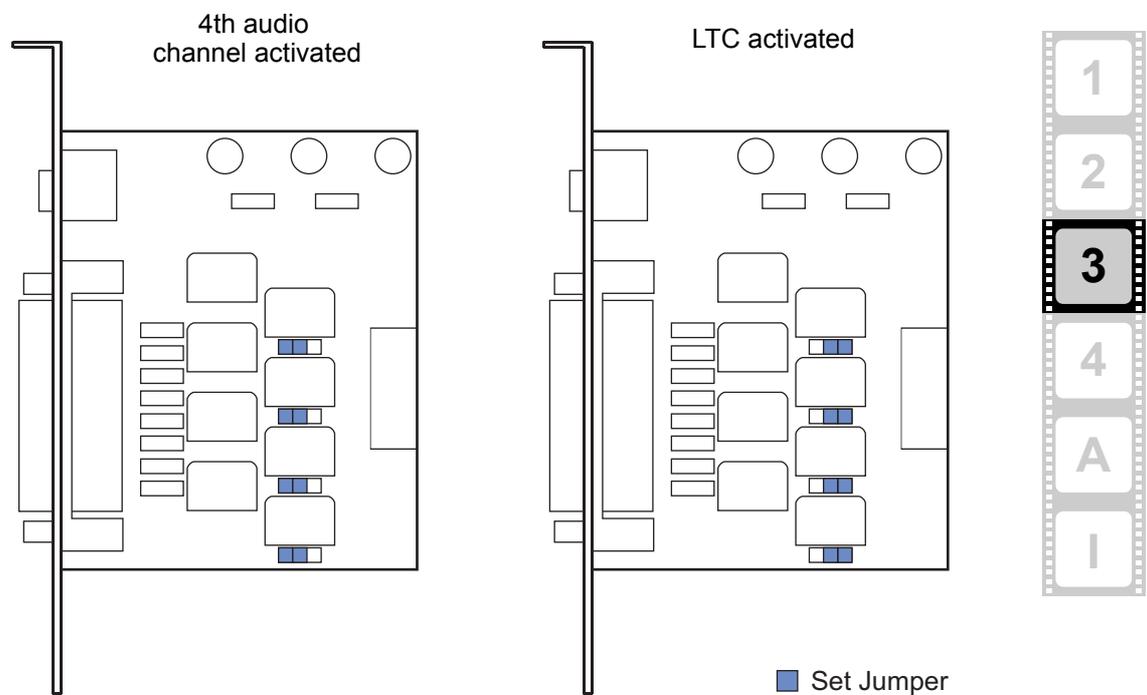


Figure 3-1: Jumper settings for audio circuit board

After checking and, if appropriate, adjusting the jumpers of the audio panel for their correct settings you have to check the settings of the GPI and wordclock panel.

### Jumper Settings of the GPI and Wordclock Panel

Prior to the installation of the GPI and wordclock panel, you have to check the jumpers on the printed board of the GPI for their correct settings. If they are not set correctly, using this interface may result in an unexpected behavior of Centaurus.

- Please check whether the jumpers are set as shown in the figure below:

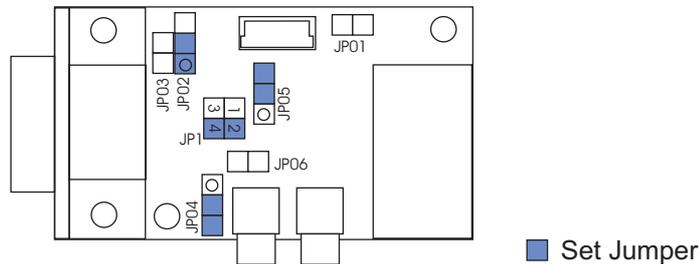


Figure 3-2: Jumper settings

After checking and, if appropriate, adjusting the jumpers on the printed board for the GPI you have to set up the clock frequency of the PCI-X bus and the Iris board.

### Setting up the Clock Frequency

The Iris board has to be plugged in a PCI-X bus that operates with either 66 or 100 MHz. It will not work when plugged in a bus set to 133 MHz. Ex factory the board is set to operate with 66 MHz. If you want to use it, for example, with 100 MHz you have to set the PCI-X bus in the Bios of the computer system to the appropriate clock frequency and the DIP switch for PCI on the Iris board to the correct setting:



If Centaurus is set to 66 MHz, two HDTV and 2K data streams at the same time will not be possible. Furthermore, for an optimum performance of Centaurus it is recommended to have no other data transfers running in the same PCI bus.

- Identify and select the PCI-X bus where Centaurus shall be installed.
- In the Bios of the computer system set this bus to the setting of your liking, i.e. either 66 or 100 MHz.
- Set the DIP switch for PCI on the Iris board to the chosen setting as indicated in section “Iris Board Layout” on page 2-2.

After setting up the board and the PCI-X bus for the desired clock frequency the preparations are finished and you can go on with the next step and install the board into the computer system.

### 3.1.2 Installation of the Board

With the second step the Iris board will be installed in the prepared computer system. For this perform the following:



Before installing the board you have to set up the PCI-X bus and the board to a specific clock frequency. Otherwise Centaurus may not work. Further information about this can be found in section “Setting up the Clock Frequency” on page 3-4.

- In the computer system remove the slot bracket from the selected 66/100-MHz PCI-X slot where the Iris board should be installed.
- Insert the Iris board without using excessive force or bending it.
- Fasten the board with the screw from the slot bracket.



For an error-free working the Iris board needs to be cooled by fans.

After this the Iris board is installed in the computer system and you can move on to the next step, i.e. the installation of the panels.

### 3.1.3 Installation of the Panels

As the third step you have to connect the delivered panels internally with the Iris board and install them in your computer system. For this perform the following:

- Remove as many slot brackets as you need for the additional panels.



The number of additional panels depends on the optional features ordered with Centaurus.

- Now install the panels: Insert the panels of Centaurus into the empty slots and fasten each with a screw from the slot brackets.
- Connect the cables to the appropriate Iris board interfaces as detailed in the following:

#### Connecting the SDI and RS-422 Panel

In a board setup without the IM board (single-link HDTV) the (HD) SDI connectors of the SDI and RS-422 panel are linked to the second link of the SD stream. The respective connections can be found at the top of the Iris board. With them connected Centaurus will be able to follow the SMPTE259 specification for SDTV signals.

In the dual-link HDTV version of Centaurus the HD SDI will be connected to the connectors of the IM board (see dotted line in figure below). In this case the SDI links provide a multi-rate connection in



accordance with the specifications SMPTE259, SMPTE292 and SMPTE372.

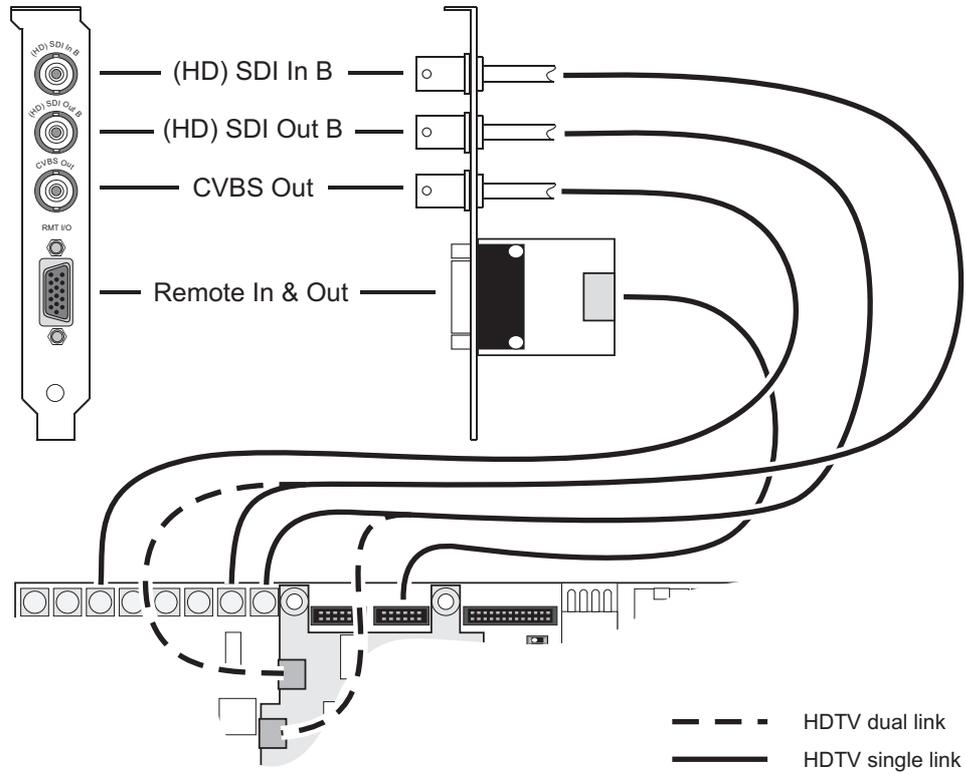


Figure 3-3: Internal connection of SDI and RS-422 panel

## Connecting the Audio Panel

The audio slot panel is connected via a 26-pin flat cable to the Iris board. To perform the internal connections connect the panel to the board as shown in the following figure:



Prior to the installation of the audio panel you have to set the jumpers on the printed board to their desired settings: you can choose between four digital stereo channels or three digital stereo channels and one LTC in- and output. This is described in detail in section “Jumper Settings of the Audio Panel” on page 3-3.

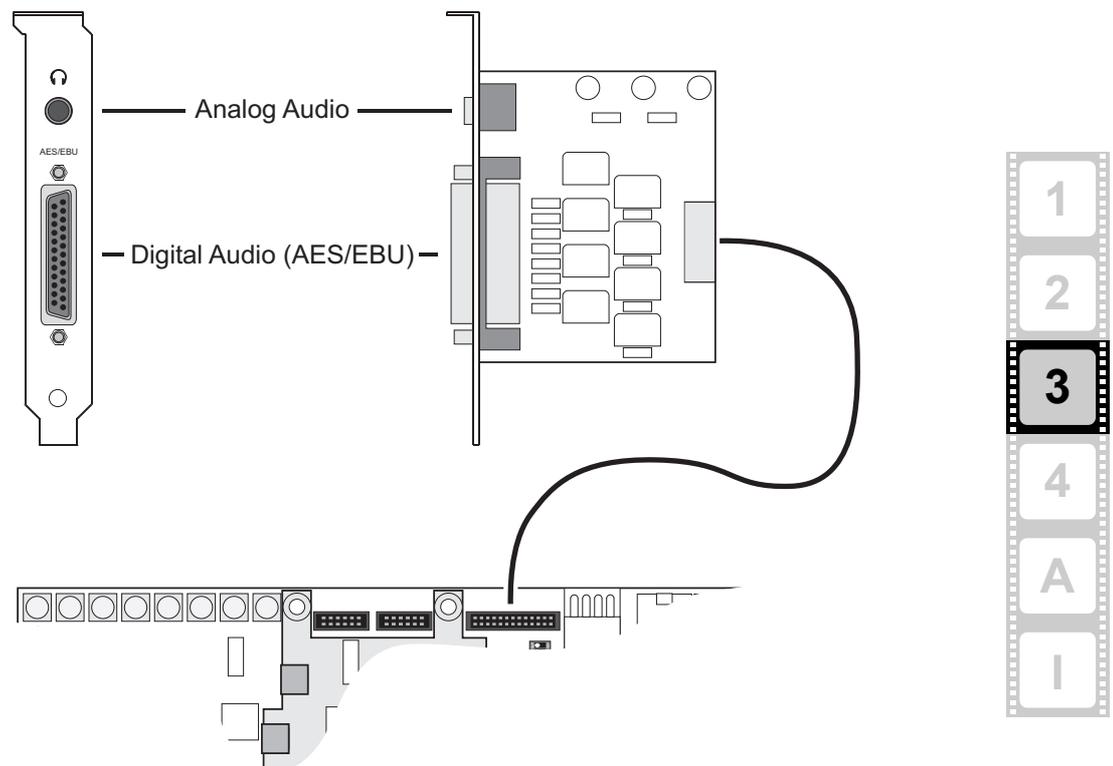


Figure 3-4: Internal connection of audio panel

## Connecting the GPI and Wordclock Panel

The printed board behind the GPI connector plugs via a 12-pin flat cable to the top of the Iris board. To perform the internal connections connect the panel to the board as shown in the following figure:



Prior to the installation of the GPI and audio wordclock panel you have to check the jumpers on the printed board of the GPI for their correct settings. This is described in detail in section “Jumper Settings of the GPI and Wordclock Panel” on page 3-3.

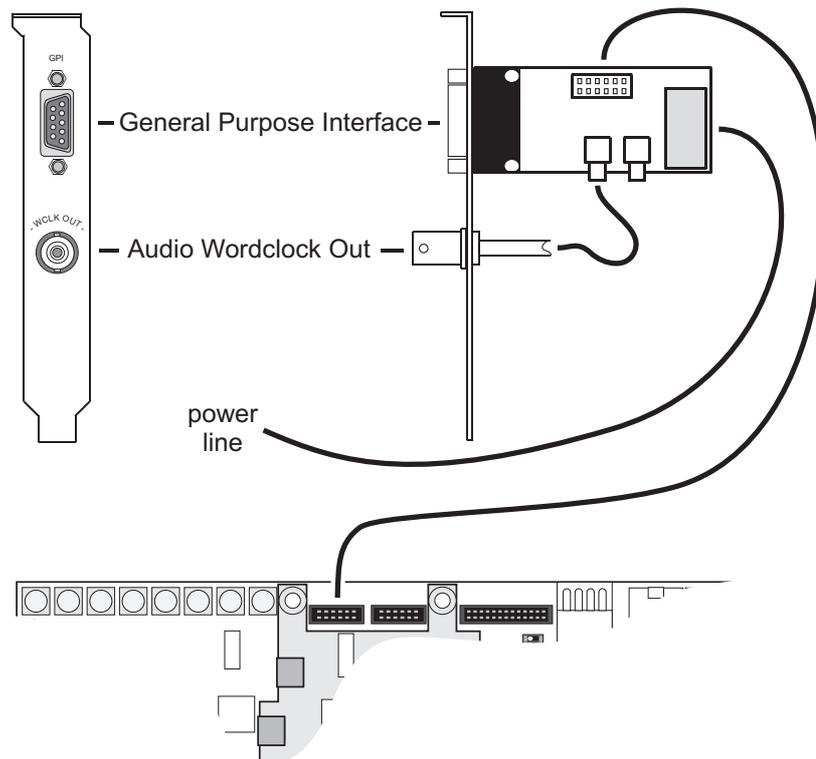


Figure 3-5: Internal connection of GPI and wordclock panel

The power line to be connected to the printed circuit board of the GPI has to be a standard power distribution line of your computer system. It should be of the same type as, for example, used to power your CD-ROM, with the following specifications:

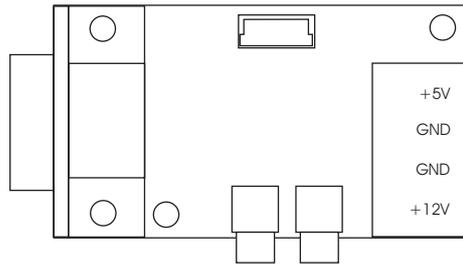


Figure 3-6: Power line specification



The connected extra power line of the GPI makes the GPI signal stronger and clearer. However, if you do not have a power line available, the GPI will still be functional.

When the internal connections are all set up, Centaurus is properly connected to your computer system. As a last step you must now finish the installation.

### 3.1.4 Finishing the Installation

This step of installing the Iris board is the last step to be performed. To finish the installation do the following:

- Close the computer casing.
- Connect all cables to the computer again.
- Connect your audio and video equipment to the Centaurus connectors.

After that the installation of Centaurus as a hardware is complete. To use the board and activate its features you have to install the software as well.



## 3.2 Software Installation



Beside the files for software development, the SDK software also contains the Iris board driver and tools for basic hardware setup and diagnostic. Therefore, for descriptions of the software and driver installation, please refer to the separate SDK documentation.

Once the software installation is completed, you have to activate the feature set available for Centaurus with the delivered license key.

## 3.3 Setting the License Key

This section explains how to set the license key on the computer system equipped with Centaurus. The license key activates the individual features that you have ordered for your DVS product. After the SDK and the driver are installed, you have to set the license key for Centaurus to be able to use the full feature set.

Because DVS supports several operating system platforms, this section is divided into the different setup procedures for the respective operating system (i.e. 'Windows' and 'All Operating Systems').

Centaurus is capable of holding three license keys. The first key (Key 1) is usually used for licensing the features that were ordered with Centaurus. Keys 2 and 3 are usually used for temporary licenses that you may have received for evaluation purposes. Each license key enables one or more (optional) features of Centaurus until date of expiration (if applicable). Each time Centaurus starts, all keys are checked and their features are combined.

### 3.3.1 Setting of License Key (Windows Only)

Once the SDK and the driver are properly installed, you have to set the license key for Centaurus to be able to use all ordered features.

To set the license key Windows offers you with the DVSCConf program the possibility to use a standard graphical user interface.



You may also use the procedure described in section "Setting of License Key (All Operating Systems)" on page 3-13.

The following assumes that the DVSCConf program is already running and that the driver is correctly loaded.



In case the driver is not already loaded, load the driver with the 'Driver' tab of the DVSCConf program.

Further information on how to operate the DVSCConf program can be found in the SDK manual.

To set the license key with the help of the DVSCConf program perform the following:

- Change to the 'Card0' tab.



For each installed Iris board there is a 'Card' tab available. If you have more than one Iris board installed in your computer system, you have to repeat the following steps with 'Card1', 'Card2', etc.

- Click the button **SETUP** and select from the opening menu the option **Set Licence**:

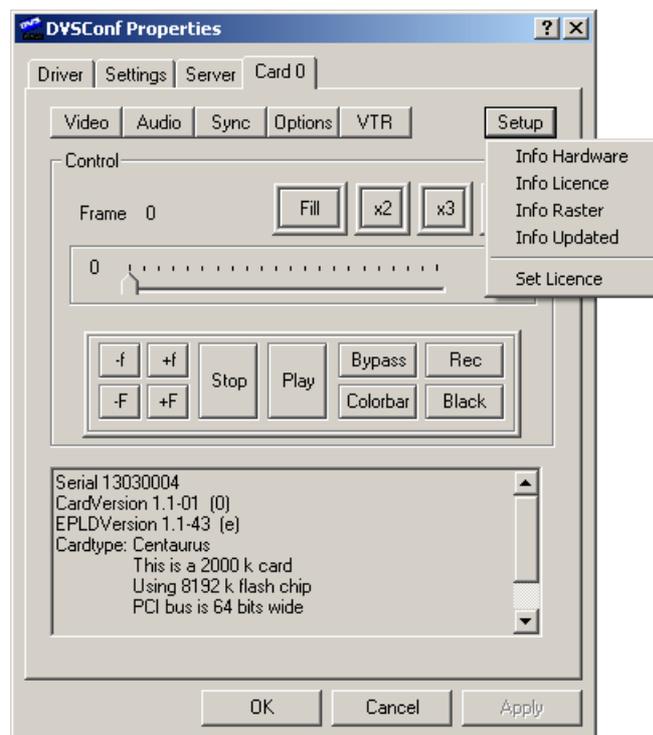


Figure 3-7: 'Card0' tab

The following dialog window opens:



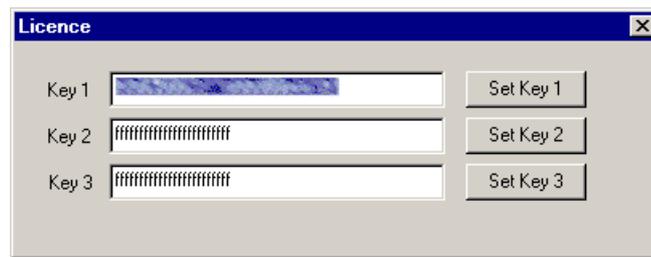


Figure 3-8: 'Licence' dialog window

- In the field 'Key 1' enter the license key that you received with Centaurus and click the **SET KEY 1** button.

The '**Licence**' dialog window closes. The new license key is now set and will be stored unalterably in Centaurus.



The features activated with this licence key can be displayed by clicking the button **SETUP** and selecting from the menu the option **Info Licence**.

- Repeat the described steps above to activate the features for keys 2 and 3, if appropriate.
- If you have more than one Iris board installed in your computer system, change to their respective card tabs and repeat the steps to activate their features.
- Reboot the computer system.

Once the system has started, all licensed features will be available to Centaurus.



Depending on the SDK version, you may need to upgrade the PCI interface of the Iris board. More information about this can be found in section "Upgrading the PCI Interface" on page 3-14.

To be sure your Iris board works properly, you may also test your installation. Details on how to perform a testing of your installation can be found in section "Testing the Installation" on page 3-16.

### 3.3.2 Setting of License Key (All Operating Systems)

Once the SDK and the driver are properly installed, you have to set the license key for Centaurus to be able to use all ordered features.



The following procedure uses the command line (shell, or in case of Windows MS DOS prompt). This is the common way for most operating systems to perform such a procedure.

To set the license key with the command line (shell), you have to open the shell first. After that perform the following:



In case the driver is not already loaded, load the driver. Further information about this can be found in the SDK manual.



In case you have several Iris boards installed, use the environment variable `SCSIVIDEO_CMD` and set it to `PCI, card: <x>` (with `<x>` as the number of the board) to access a particular board. Please refer to the SDK documentation for details about setting the variable `SCSIVIDEO_CMD`.

- Enter the command **`svram licence key1 <key value>`**. For `<key value>` insert the license key that you received with Centaurus.

The new license key is set now and will be stored unalterably in Centaurus.



The features activated with this licence key can be checked with the command **`svram licence show`**.

- Repeat the described steps to activate the features for keys 2 and 3, if appropriate, by altering the command respectively.
- If you have more than one Iris board installed in your computer system, use the environment variable `SCSIVIDEO_CMD` to access the respective board and repeat the steps to activate its features.
- Reboot the computer system.

Once the system has started, all licensed features will be available to Centaurus.



Depending on the SDK version, you may need to upgrade the PCI interface of the Iris board. More information about this can be found in section “Upgrading the PCI Interface” on page 3-14.

To be sure your Iris board works properly, you may also test your installation. Details on how to perform a testing of your installation can be found in section “Testing the Installation” on page 3-16.



## 3.4 Upgrading the PCI Interface

Depending on the SDK version you may need to upgrade the PCI interface of the Iris board. This is done with a program named *irisup###*. This section explains how to determine whether you need and how to perform a PCI interface upgrade.



An upgrade should be performed by qualified personnel only. Before you upgrade the PCI interface you have to close all other applications.

Be aware of a power failure. If this happens, you have to use the fallback PCI version of the Iris board as detailed in section “PCI Upgrade Failure” on page 4-2.



For the newest version of the firmware (*irisup###*) check the DVS OEM web page (<http://private.dvs.de/custhome>).

Before upgrading the PCI interface you have to determine whether a PCI upgrade is necessary. Therefore, you need to know the PCI interface version, that you need at least to work properly with the SDK installed. You can find this information in the *readme.txt* file stored in the SDK installation folder. Look for the line that says ‘Use hardware 2.1.**38-14** or higher’ or similar. The last two numbers (bold in our example), tell you the PCI interface version.



The following procedure uses the command line (shell, or in case of Windows MS DOS prompt).

Now you have to check the PCI interface version of your Iris board:

- Open a command line (shell).



If the driver is not already loaded, load the driver. Further information about this can be found in the SDK manual.



In case you have several Iris boards installed, use the environment variable `SCSIVIDEO_CMD` and set it to `PCI, card: <x>` (with `<x>` as the number of the board) to access a particular board. Please refer to the SDK documentation for details about setting the variable `SCSIVIDEO_CMD`.

- Enter in the command line **svram version**.
- In the output look for the line that says ‘flash-pci: [...] PCIX 2.1.**43-22**’ or similar.



‘[...]’ stands for some additional version information that are not necessary for this procedure.

- The numbers of the PCI interface version (bold here) have to be as high as the numbers in the *readme.txt* at least.

If the version numbers of the installed PCI interface are lower than the version required for the DVS software, the PCI interface has to be upgraded.



Compare the numbers separately: if one of them is lower than its counterpart in the *readme.txt* you have to perform an upgrade.

In our example chosen here the Iris board does not need a PCI interface upgrade.

If you determined that a PCI interface upgrade is necessary, perform the following:

- Open a command line (shell).
- Run the update program *irisup###*.



*###* is the PCI interface version that *irisup###* upgrades the Iris board to (e.g. *irisup\_2.1.43\_22* would upgrade the PCI interface to version 2.1.43-22. Make sure that an *irisup###* of a high enough version is available. Otherwise visit the OEM web page to get an appropriate *irisup###* version.

The program *irisup###* upgrades all installed Iris boards.

At one point of the upgrade procedure the program asks for a confirmation that you really want to upgrade the PCI. Then you have to type in a 'Y' and press [Enter].

- When *irisup###* has finished the upgrade procedure, shut down the computer and wait at least one minute before rebooting it.

This will safely erase the old PCI interface from the Iris board.

- Start the computer and, after the operating system has loaded, check the PCI interface version as described above.

If the interface version is upgraded, the procedure is finished. If it is not upgraded, perform the procedure again and give the board more time to erase the old information.



## 3.5 Testing the Installation

After having installed and set-up everything, you should test if the Centaurus installation has been successful. The SDK tools offer the possibility to generate and display test pictures for checking the Centaurus hardware.

Because DVS supports several operating system platforms, this section is divided into the different procedures for the respective operating system (i.e. 'Windows only' and 'All Operating Systems').

### 3.5.1 Testing the Installation (Windows Only)

To test the installation Windows offers you with the DVSCConf program the possibility to use a standard graphical user interface. Perform the following:



You may also use the procedure described in section "Testing the Installation (All Operating Systems)" on page 3-18.

- Connect a video monitor to the composite output or the analog video output connectors of Centaurus (see also chapter "Overview" on page 2-1).
- Open the DVSCConf program.



In case the driver is not already loaded, load the driver with the 'Driver' tab of the DVSCConf program.

Further information on how to operate the DVSCConf program can be found in the SDK manual.

- Optionally you may change the settings on the 'Settings' and 'Server' tabs as desired.

Now the computer system is ready to generate test frames:

- Change to the 'Card0' tab.



For each installed Iris board there is a 'Card' tab available. If you have more than one Iris board installed in your computer system, you have to repeat the following steps with 'Card1', 'Card2', etc.

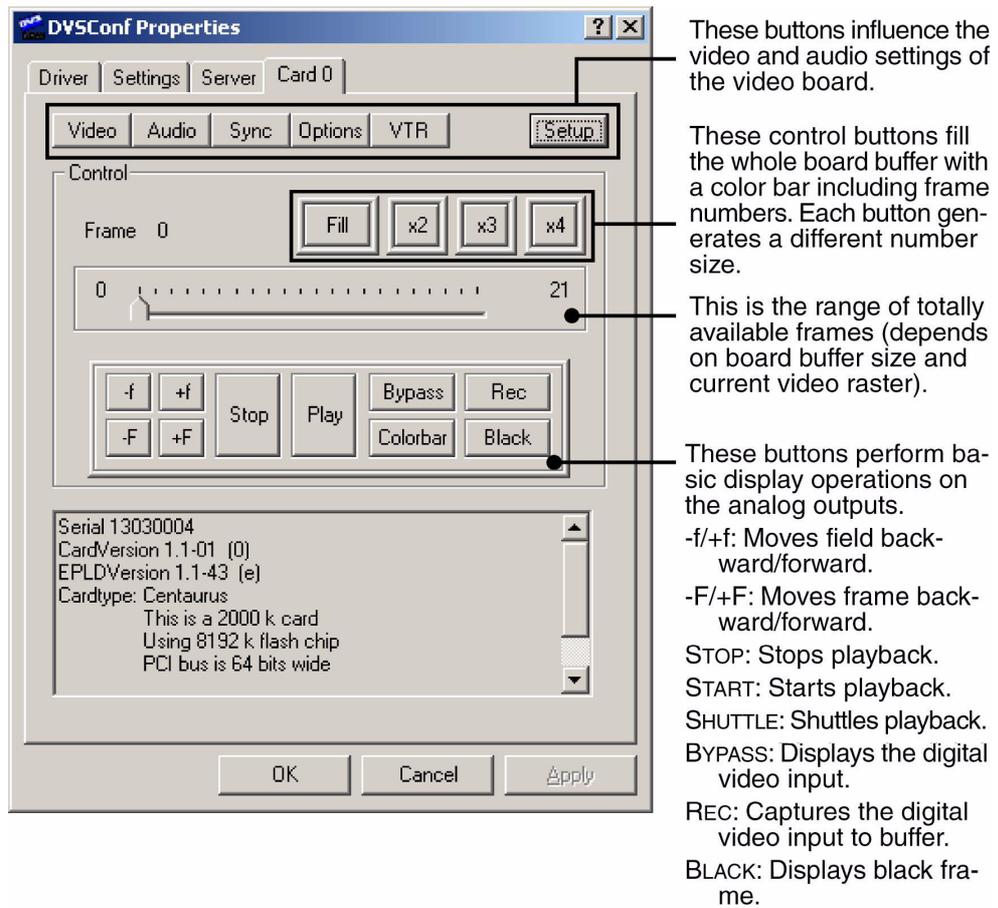


Figure 3-9: Overview 'Card' tab of DVSConf

- Use the buttons at the top of the 'Card' tab to select the desired video and audio settings.
- Use the **FILL**, **x2**, **x3**, or **x4** buttons to fill the Iris board buffer with a test pattern.
- Perform the display operations with the lower buttons.

If this works, you have successfully completed the Centaurus installation. In the SDK you find some sample programs that can also be used for testing.



The DVSConf program only affects the buffer and the I/O functions of the Iris board. For testing optionally installed video disks you will have to use your own test routines.



### 3.5.2 Testing the Installation (All Operating Systems)

To test the installation perform the following:



The following procedure uses the command line (shell, or in case of Windows MS DOS prompt). This is the common way for most operating systems to perform such a procedure.

- Connect a video monitor to the composite output or the analog video output connectors of Centaurus (see also chapter “Overview” on page 2-1).
- Open a command line (shell).



If the driver is not already loaded, load the driver. Further information about this can be found in the SDK manual.

Now the computer system is ready to display test frames:



In case you have several Iris boards installed, use the environment variable `SCSIVIDEO_CMD` and set it to `PCI, card:<x>` (with `<x>` as the number of the board) to access a particular board. Please refer to the SDK documentation for details about setting the variable `SCSIVIDEO_CMD`.

- Use `svram videomode`, `svram sync`, `svram analog`, etc. to select the desired video and audio settings (further information about the commands can be found in the SDK manual).
- Enter `svram colorbar` to display a color bar on the output.

If this works, you have successfully completed the Centaurus installation. In the SDK you find some sample programs that can also be used for testing.



The `svram` program only affects the buffer and the I/O functions of the Iris board. For testing optionally installed video disks you will have to use your own test routines.

# Maintenance



This chapter explains maintenance work that you may perform on your own, i.e. it will be explained in detail what to do in case of a PCI upgrade failure (see section “Upgrading the PCI Interface” on page 3-14). If you experience trouble after a PCI upgrade that cannot be resolved with the procedure described here, please contact the DVS service department.



## 4.1 PCI Upgrade Failure

An upgrade of the PCI interface is a delicate procedure comparable to a BIOS upgrade of a computer motherboard. If, for example, an environmental extreme like a power failure occurs while the upgrade program is running, the PCI video board may lose all its programming. Until now, you had to send in such a case the respective board back to DVS for reprogramming. With Centaurus this is different:

If an environmental extreme happens during a PCI upgrade and the programming of the PCI video board is lost, act as described in the following:



The computer system you are working on usually works with voltages that can be hazardous to your health.

Never access its interior with the power cable(s) being plugged in. Make sure the system is cut from power before opening its casing.



Computer hardware contains components that are sensitive to electrostatic discharge. If you touch them without precautionary measures they can be destroyed.

Use a wrist strap connected to ground when accessing electronic parts. Avoid touching the components of the computer and the PCI video board.

- If appropriate, turn off the video system where Centaurus is installed and disconnect its power cable(s).
- Open the casing of the video system.



For details on how to do this, please refer to the respective manufacturer's manual.

- Set the DIP switch for the Flash controller on the PCI video board to the following setting:

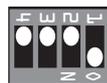


Figure 4-1: Setting of Flash controller DIP switch

This setting will load a save mode programming (fallback map) when the PCI video board is initialized during start-up. Now use this fallback map to perform the PCI upgrade once again:

- Close the casing of the video system and plug in its power cables.

- Turn on the video system.
- After the start-up of the computer and the loading of the operating system run the PCI upgrade program (*irisup###*) once again.



The PCI upgrade program upgrades all installed DVS PCI video boards in your system.

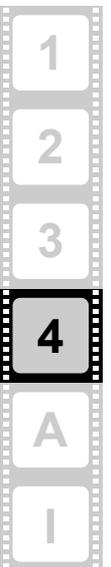
At one point of the upgrade procedure the program asks for a confirmation that you really want to upgrade the PCI. Then you have to type in a 'Y' and press [Enter].

- When the update program has finished the procedure, shut down the computer.

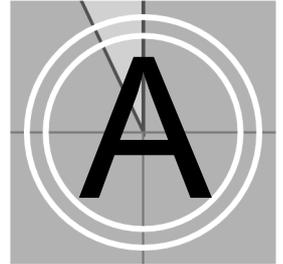
You must now set the DIP switch for the Flash controller back to its default position. For this perform the following:

- Disconnect the power cable(s) of the video system.
- Open the casing of the video system.
- Then set the DIP switch for the Flash controller to its default setting again as shown in the respective figure on page 2-3.
- Close the casing and plug in the power cable(s).
- Now start the computer.
- After the operating system has loaded check the PCI interface version as described in section "Upgrading the PCI Interface" on page 3-14.

If the interface version is upgraded, the procedure is finished. If it is not upgraded, perform the procedure described in this section at least a second time again.







# Appendix

This chapter provides technical data and general information about Centaurus.

## A.1 Technical Data

The following shows the technical data of the Iris board.

PCI bus requirements	PCI-X
Board size	Half-length, single-slot
Electrical type	3.3 volt
Conformity	PCI-X Specification 1.0
Operating environmental conditions	5°C (41°F) to 40°C (104°F) 20% to 80% relative humidity, non-condensing
Storage environmental conditions	-17°C (0°F) to 70°C (158°F) 10% to 80% relative humidity, non-condensing



## A.2 Hardware Specifications

The following table shows the hardware specifications of the Iris board.

**Table A-1: Centaurus specifications**

Video	Input	Output
Analog		3 BNC RGB/YUV or CVBS and Y/C
DVI		1 DVI
HD Serial Digital 4:2:2 8/10 bit HD Serial Digital 4:4:4 8/10 bit (Dual Link)	1 BNC 2 BNC	1 BNC 2 BNC
Serial Digital 4:2:2 8/10 bit Serial Digital 4:4:4 8/10 bit (Dual Link)	1 BNC 2 BNC	1 BNC 2 BNC
Key	Input	Output
HD Serial Digital 4:0:0 8/10 bit for 4:2:2:4 and 4:4:4:4 Mode	1 BNC	1 BNC
Serial Digital 4:0:0 8/10 bit for 4:2:2:4 and 4:4:4:4 Mode	1 BNC	1 BNC
Reference	Input	Output
Analog Reference Genlock	1 BNC	1 BNC for S/H 1 BNC for V
Wordclock		1 BNC
Audio	Input	Output
Embedded Audio, 4 Digital Stereo Channels	1 BNC (via Video In)	1 BNC (via Video Out)
AES/EBU, 4 Digital Stereo Channels	4 XLR female or 4 BNC	4 XLR male or 4 BNC
Analog Audio		1 stereo head-phone jack
Timecode	Input	Output
Longitudinal (LTC)	1 XLR female	1 XLR male
Vertical (VITC)	1 BNC (via Video In)	1 BNC (via Video Out)
Data and Control Interfaces	Input	Output
Serial RS-422	1 DB-9 female (software switchable)	1 DB-9 female (software switchable)
GPI (1 DB-9)	3 TTL	3 TTL

Table A-1: Centaurus specifications (cont.)

Data Formats	
Color Modes	YCbCr 4:2:2 YCbCrA 4:2:2:4 RGB 4:4:4 RGBA 4:4:4:4
Storage Format	Uncompressed YUV(A) 4:2:2(:4) / RGB(A) 4:4:4(:4) 8/10 bit, user selectable
Internal Processing	Color space conversion User definable LUT Frame repetition Real-time mixer Input raster detection
Audio Formats	48 kHz, 20/24 bit



## A.3 Video Raster

The following table shows the supported video raster. All frequencies indicate the frame rate.

**Table A-2: Supported video raster**

Raster	Total lines per frame	x size	y size	Aspect ratio
525i 29.97 Hz (NTSC)	525	720	486	4:3
625i 25 Hz (PAL)	625	720	576	4:3
525i 29.97 Hz (NTSC HR)	525	960	486	16:9
625i 25 Hz (PAL HR)	625	960	576	16:9
720p 23.976 Hz 720p 24 Hz	750	1280	720	16:9
720p 25 Hz	750	1280	720	16:9
720p 29.97Hz 720p 30 Hz	750	1280	720	16:9
720p 50 Hz	750	1280	720	16:9
720p 59.94 Hz 720p 60 Hz	750	1280	720	16:9
1035i 29.97 Hz 1035i 30 Hz	1125	1920	1035	16:9
1080i 23.976 Hz 1080i 24 Hz	1250	1920	1080	16:9
1080i 25 Hz	1125	1920	1080	16:9
1080i 29.97 Hz 1080i 30 Hz	1125	1920	1080	16:9
1080p 23.976 Hz 1080p 24 Hz	1125	1920	1080	16:9
1080p 25 Hz	1125	1920	1080	16:9
1080p 29.97 Hz 1080p 30 Hz	1125	1920	1080	16:9
1080sF 23.976 Hz 1080sF 24 Hz	1125	1920	1080	16:9
1080sF 25 Hz	1125	1920	1080	16:9
1080sF 29.97 Hz 1080sF 30 Hz	1125	1920	1080	16:9

Table A-2: Supported video raster (cont.)

Raster	Total lines per frame	x size	y size	Aspect ratio
2048p 23.976 Hz 2048p 24 Hz	1025	2048	1080	–
2048p 24 Hz	1600	2048	1556	4:3
2048p 24 Hz	1600	2048	1536	4:3
2048sF 14.985 Hz 2048sF 15 Hz	1980	2048	1556	4:3
2048sF 24 Hz	1600	2048	1556	4:3
2048sF 24 Hz	1600	2048	1536	4:3
2048sF 30 Hz	1600	2048	1556	4:3



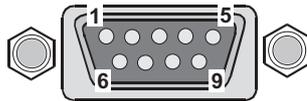
You can find information about the internal data representation of video, audio, and timecode in the SDK documentation.



## A.4 Signal In- and Outputs

This section provides pin-out information about some of the connectors provided by Centaurus.

### GPI (9-Pin D-Sub Connector)

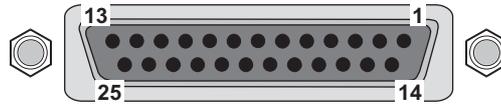


(external view;  
male on interface, female on cable)

Pin No.	Signal
1	–
2	GND
3	GPI_OUT0 (GPI output 0)
4	GPI_IN0 (GPI input 0)
5	–
6	–
7	GPI_OUT1 (GPI output 1)
8	GPI_IN1 (GPI input 1)
9	GND

The GPI inputs are voltage sensing inputs with TTL trigger levels ( $> 2V = \text{high}$ ,  $< 0,8V = \text{low}$ ). Without any input they are set to 'high'. Thus, with a connected switch the user will be able to connect the voltage level to ground (GND) and no extra power supply has to be set for the GPI inputs.

### Digital Audio (25-Pin D-Sub Connector)

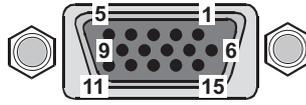


(external view;  
female on interface, male on cable)

Pin No.	Signal	Pin No.	Signal
1	Audio OUT CH 7/8	14	/Audio OUT CH 7/8
2	GND	15	Audio OUT CH 5/6
3	/Audio OUT CH 5/6	16	GND
4	Audio OUT CH 3/4	17	/Audio OUT CH 3/4
5	GND	18	Audio OUT CH 1/2
6	/Audio OUT CH 1/2	19	GND
7	Audio IN CH 7/8	20	/Audio IN CH 7/8
8	GND	21	Audio OUT CH 5/6
9	/Audio IN CH 5/6	22	GND
10	Audio IN CH 3/4	23	/Audio IN CH 3/4
11	GND	24	Audio IN CH 1/2
12	/Audio IN CH 1/2	25	GND
13	–		



### Remote In- and Output (15-Pin D-Sub HD Connector)

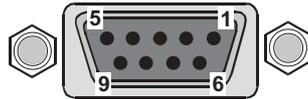


(external view;  
female on interface, male on cable)

Pin No.	Signal	Pin No.	Signal
1	/RX_A_CON	9	GND
2	–	10	TX_B_CON
3	/TX_A_CON	11	GND
4	RX_B_CON	12	RX_A_CON
5	GND	13	/TX_B_CON
6	TX_A_CON	14	–
7	GND	15	/RX_B_CON
8	–		

**RMT 1 and RMT 2 (9-Pin D-Sub Connectors on Breakout Cable)**

The RS-422 connector available on the slot panel of Centaurus is a DB-15 (HD) connector. It can be equipped with a breakout cable that will then provide two female DB-9 connectors for a standard RS-422 connection (see figure 2-4 on page 2-9). The two ports can be switched between master and slave mode, i.e. between RMT OUT and RMT IN.



(external view;  
female on breakout cable, male on cable)

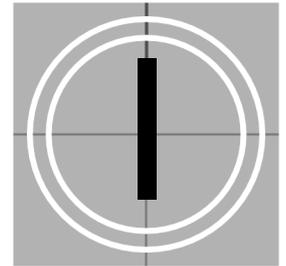
RMT IN	
Pin No.	Signal
1	–
2	/TX_B_CON
3	RX_B_CON
4	GND
5	–
6	GND
7	TX_B_CON
8	/RX_B_CON
9	–

RMT OUT	
Pin No.	Signal
1	–
2	/RX_A_CON
3	TX_A_CON
4	GND
5	–
6	GND
7	RX_A_CON
8	/TX_A_CON
9	–





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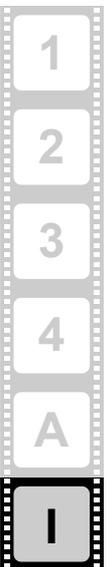
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